

THE POLYCHAETE FAUNA OF THE GOLD COAST

By NORMAN TEBBLE

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1. INTRODUCTION

No large collections of Polychaetes from the Gold Coast have previously been systematically studied, though a few records were noted by Augener (1918). The present Faunal Survey results from the examination of littoral collections, down to a depth of 51 metres, made by Mr. R. Bassindale in 1949-51. Important additional material has been collected by Mr. J. B. Buchanan. The author is grateful to these gentlemen for the privilege of studying these collections, through which the known geographical distribution of many species is extended. Altogether ninety-five records of Polychaetes from the Gold Coast are here reported, including two new to science.

In the Systematic Section a key to all families, keys to genera and species where necessary and a glossary of terms used in the descriptions have been included. All previous records from the area have been noted although they may refer to species not examined here. References to species have been restricted, as far as possible, to standard monographic studies on the group; the most important are Augener, 1918, and Fauvel, 1923 and 1927*a*.

Dr. A. B. Hastings kindly identified the Polyzoan specimens with which some Serpulidae are associated and the author also wishes to acknowledge the technical assistance he has received from Miss A. C. Edwards, of the British Museum (Nat. Hist.) staff, particularly in the drawing of figures and charts.

2. STATION DETAILS

Littoral collections were made at the following places; the details have been provided by Mr. R. Bassindale.

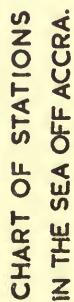
1. *Accra* (5° 30' N., 0° 15' W.) (a) *Christiansborg*. The reef at *Christiansborg* lies at the foot of the Governor's Castle (2 miles east of *Accra* lighthouse)

and consists of native rock with small deep pools mainly at the lowest levels. There is sand and just a little exposed rock above mid-tide level.

(b) Chorkor. A seine net was operated from the sand beach here, two miles west of Accra lighthouse.

- II. *Tenpobo and Pram Pram*, 24 and 23 miles, respectively, east of Accra. The coast is of sand and the upper three-quarters of the beach is a steep sand slope. Near the headlands of a series of shallow bays there are low level rocks and boulder reefs jutting out to sea. These reefs occupy the lowest foot of spring tide range except for native rock, which may rise one or two feet above this level. Maximum tidal range is six feet, and neap tides do not expose the levels from 0-1 foot above chart datum (low tide level of ordinary spring tides). At Tenpobo the reefs are protected from low level wave wash by a line of high rocks to seaward. There are many small boulders and stones on the reef; gravel and sand packing between the stones is common.
- III. *Winneba*, 32 miles west of Accra. The beach here is of native rock from below low tide level to above high tide level.
- IV. *Apam*, 39 miles west of Accra. The shore is of rock and boulders set in sand with rock pools. Extending to the east is a shallow sand bay with sandy mud in the shelter of the Apam headland.
- V. *Sekondi*, 113 miles west of Accra. Collections here were made from the horizontal surface of a rock plateau at or above high tide level. The waves wash over the plateau at most states of the tide and so replenish the pools. There is probably no period of complete submergence of the plateau.
- VI. *Dixcove*, 131 miles west of Accra. The bay at Dixcove is almost square, the sides being about 400 yards long. The innermost side of the bay has a sandy beach with large boulders and native rock at low tide level—the rocks rising to mid-tide level or higher. Collections were also made on the western side of the bay which consists of small boulders and stones, with sand, mud and gravel closer in.
- VII. *Princes Town*, 142 miles west of Accra. A solid rocky headland very much wave-washed, with a few boulders round the headland to the east.
- VIII. *Axim*, 154 miles west of Accra: (a) The Hospital Reef consists of a narrow belt of rock, boulders and stones jutting out to sea. Collections here were made from the exposed side.
- (b) The Lighthouse Reef juts out in a similar way but is protected by two islands, one half way along and one at the seaward end. In-shore the reef is at low level and has stones with gravel, sand and mud. Further out the stones increase in size until very large boulders occur on the exposed side. Collections here were made mainly from the sheltered side.

Off-shore collections were made by Mr. Bassindale entirely within the area off Accra shown on the chart (p. 63). The following lists give further details of the stations. Several collections were made by Mr. Bassindale at stations which are not



▲ AGASSIZ TRAWL. x OTHER STATIONS.
● LARGE DREDGE. ▨ BUCHANAN SURVEY
○ SMALL DREDGE. 3-6 to 11-0 METRES.

numbered and they are referred to in the text by reference to points on the coast. Mr. Buchanan made part of his survey within the area indicated on the chart between 3.6 and 11.0 metres; other stations at which he made collections have also been referred to as the Buchanan Survey and their positions have been indicated in the same way.

List of Collecting Stations in the Sea off Accra

All dredge hauls of 10 minute duration and Agassiz Trawl hauls of 15 minute duration except where stated.

Station number	Date	Depth in metres	Instrument used	
5	9.xi.50	13	Large dredge	
6	"	12	"	
10	19.xi.50	14	"	9 min.
11	"	13	"	
12	"	16	"	
14	28.xi.50	20	"	
15	"	16	"	
16	"	17	"	
27	14.xii.50	22	"	5 min.
28	"	30	"	8 min.
29	20.xii.50	13	"	
32	"	11	"	
33	"	28	"	
35	21.xii.50	37	"	30 min.
44	31.xii.50	35	"	
47	4.i.51	44	Small dredge	15 min.
48	"	44	Large dredge	
52	"	45	Small dredge	
53	15.i.51	11	"	
54	"	11	"	
55	"	12	"	
56	"	16	"	
57	17.i.51	16	"	
58	"	20	"	
59	"	24	"	
61	18.i.51	26	"	
62	"	30	"	
65	22.i.51	7	"	
66	"	10	"	
67	"	14	"	
68	"	19	"	
69	"	22	"	
70	24.i.51	25	"	
71	"	30	"	
73	"	41	"	
80	21.ii.51	10	Agassiz Trawl	
88	5.iii.51	13	"	
89	7.iii.51	16	"	

List of Collecting Stations in the Sea off Accra—cont.

Station number	Date	Depth in metres	Instrument used
92	12.iii.51	11	Agassiz Trawl
93	"	12	"
94	"	17	"
95	"	17	"
97	14.iii.51	20	"
99	"	28	"
104	29.iii.51	13	"
110	4.iv.51	40	"
111	"	43	"
115	5.iv.51	24	No details
121	11.iv.51	8	Agassiz Trawl
123	"	9	"
124	12.iv.51	11	"
125	"	16	"
126	"	20	"
127	14.iv.51	17	"
130	26.iv.51	32	"
131	2.v.51	37	"
132	"	44	"
133	"	51	"

Approximate distance covered in normal 10-minute haul with large dredge was 700 metres, in normal 15-minute haul with Agassiz Trawl, 400 metres. (More in shallow and less in deep water.)

3. LIST OF SPECIES AND DISTRIBUTION

× = Collected in the present survey.

o = Recorded by Augener (1918), not collected in the present survey.

Species	Localities									
	Tenpo and Pram Pram	Accra		Winneba	Apam	Sekondi	Dixcove	Princes Town	Hospital Reef	Axim
		Intertidal	Off-shore							Lighthouse "
APHRODITIDAE										
<i>Aphrodite alta</i>	.	.	×	.	.	.	.	.	.	.
<i>Hermione hystrix</i>	.	.	×	.	.	.	.	.	.	.
<i>Panthalis bicolor</i>	.	.	×	.	.	.	.	.	.	.
<i>Euthalenessa insignis</i>	.	.	.	.	o	.	.	.	.	.
<i>Eusigalion vazensis</i>	.	.	×	.	.	.	.	.	.	.
<i>Sthenelais boa</i>	×	.	.	.	.	.	.	.	.	.
" <i>limicola</i>	.	.	×	.	.	.	.	.	.	.
<i>Leanira japonica</i>	.	.	×	.	.	.	.	.	.	.
" <i>yhleni</i>	.	.	×	.	.	.	.	.	.	.

List of Species and Distribution—cont.

× = Collected in the present survey.

o = Recorded by Augener (1918), not collected in the present survey.

Species	Localities										
	Tenpobo and Pram Pram	Accra		Winneba	Apam	Sekondi	Dixcove	Princes Town	Hospital Reef	Lighthouse "	Shore
		Intertidal	Off-shore								
<i>Scalisetosus pellucidus</i>	..	..	×	..	..	..	..	..	..	..	..
<i>Acholoë astericola</i>	..	..	×	..	..	..	..	..	..	..	..
<i>Pareulepis geayi</i>	..	..	×	..	..	..	..	..	..	..	..
<i>Lepidonotus hupferi</i>	×	..	×	..	..	..	..	..	×	..	×
<i>Harmothoë goreensis</i>	..	..	×	..	..	..	..	..	..	..	..
CHRYSOPETALIDAE											
<i>Bhawania goodei</i>	o	×	..	..	..	..	..	..	×	..	..
AMPHINOMIDAE											
<i>Chloeia viridis</i>	..	..	×	..	..	..	..	..	..	..	..
<i>Hermodice carunculata</i> var <i>didymo-</i> <i>branchiata</i>	..	..	×	..	..	..	..	..	..	..	..
<i>Eurythoë complanata</i>	×	..	..	..	..	..	×	..	×	..	×
„ <i>parvecarunculata</i>	..	..	×	..	..	..	..	..	..	..	..
PHYLLODOCIDAE											
<i>Phyllodoce africana</i>	..	..	×	..	..	..	..	..	..	..	..
„ <i>oculata</i>	..	..	o	..	..	..	..	..	..	..	..
<i>Eteone picta</i>	..	..	×	..	..	..	..	..	..	..	..
HESIONIDAE											
<i>Leocrates claparedii</i>	..	..	..	..	..	..	..	..	×	..	..
SYLLIDAE											
<i>Trypanosyllis prampramensis</i>	o	..	..	..	..	..	..	..	..	..	..
<i>Syllis gracilis</i>	..	..	×	..	..	..	..	..	..	..	..
„ <i>variegata</i>	..	..	..	..	..	..	..	..	×	..	×
„ <i>hyalina</i>	o	..	..	..	..	..	..	..	..	..	..
„ <i>cornuta</i>	o	..	×	..	..	..	..	..	..	..	×
<i>Opisthosyllis brunnea</i>	×	..	..	×	..	..	..	..	×	..	..
<i>Pionosyllis ehlersiaeformis</i>	..	..	×	..	..	..	..	..	..	..	..
<i>Exogene gemmifera</i>	o	..	..	..	..	..	..	..	..	..	..
NEREIDAE											
<i>Nereis falsa</i>	×	×	×	×	..	..	..	..	×	×	×
<i>Neanthes succinea</i>	..	..	×	..	..	..	..	..	..	..	..
<i>Perinereis melanocephala</i>	×	×	..	×	..	×	×	..	..	..	×
<i>Pseudonereis gallapagensis</i>	..	..	..	×	..	..	..	..	×	..	×

List of Species and Distribution—cont.

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Species	Localities										
	Tenpobo and Pram Pram	Accra		Winneba	Apam	Sekondi	Dixcove	Princes Town	Axim		
		Intertidal	Off-Shore						Hospital Reef	Lighthouse "	Shore
NEPHTHYDIDAE											
<i>Nephtys hombergii</i>	.	.	..	×	..	..	..	..	..	..	..
<i>Aglaophamus lyrochaetus</i>	.	.	..	×	..	..	..	..	..	..	..
GLYCERIDAE											
<i>Glycera convoluta</i>	.	.	..	×	..	×	..	..	..	..	..
<i>Goniada multidentata</i>	.	.	..	×	..	..	..	..	..	..	..
<i>Goniadopsis incerta</i>	.	.	..	..	..	×	..	..	..	..	..
<i>Ophioglycera archeri</i> sp. n.	.	.	..	×	..	..	..	..	..	..	..
EUNICIDAE											
<i>Eunice antennata</i>	.	.	×	×	..	..	..	..	..	..	..
„ <i>vittata</i>	.	.	×	×	..	..	..	..	..	..	..
„ <i>filamentosa</i>	.	.	..	..	..	..	..	..	×	..	×
„ <i>coccinea</i>	.	.	..	..	..	..	..	..	×	..	..
„ <i>gracilis</i>	.	.	..	×	×	..	..	×	×	×	×
„ <i>rubra</i>	.	.	o	..	..	..	..	..	..	..	..
<i>Marphysa dartevellei</i>	.	.	×	×	..	..	..	..	×	..	×
<i>Lysidice ninetta</i>	.	.	..	×	..	..	..	..	..	..	..
„ <i>collaris</i>	.	.	..	×	..	..	..	..	..	..	..
<i>Diopatra musseraensis</i>	.	.	..	×	..	×	..	..	..	..	..
„ <i>neapolitana</i>	.	.	..	×	..	..	..	..	..	..	..
<i>Onuphis eremita</i>	.	.	×	×	..	..	..	..	..	..	..
<i>Lumbrineris impatiens</i>	.	.	×	×	..	..	..	..	..	..	..
„ <i>albifrons</i>	.	.	..	×	..	..	..	..	..	..	..
<i>Halla parthenopeia</i>	.	.	..	×	..	..	..	..	..	..	..
ORBINIIDAE											
<i>Orbinia foetida</i> var <i>linguistica</i>	.	.	..	×	..	..	..	..	..	..	..
<i>Scoloplos madagascarensis</i>	.	.	..	×	..	..	..	..	..	..	..
„ <i>dubia</i> , sp. n.	.	.	..	×	..	..	..	..	..	..	..
SPIONIDAE											
<i>Prionospio pinnata</i>	.	.	..	×	..	..	..	..	..	..	..
CIRRATULIDAE											
<i>Audouinia tentaculata</i>	.	.	..	..	×	..	..	..	..	..	..
„ <i>filigera</i>	.	.	..	..	..	×	×	×	×	..	..
„ <i>punctata</i>	.	.	×	..	..	..	..	..	..	..	..
<i>Cirratulus filiformis</i>	.	.	..	×	..	..	..	..	..	..	..

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Species	Localities											
	Tenpobo and Pram Pram	Accra		Winneba	Apam	Sekondi	Dixcove	Princes Town	Axim			
		Intertidal	Off-shore						Hospital Reef	Lighthouse "	Shore	
FLABELLIGERIDAE												
<i>Stylarioides scutigeroides</i> . . .	.	.	.	×	.	.	.	.	.	.	.	.
" <i>arenosus</i> . . .	.	.	.	Augener (1918), from Saltpond.								
" <i>tropicus</i> . . .	.	.	.	o	.	.	.	.	.	.	.	.
OPHELIIDAE												
<i>Armandia intermedia</i> . . .	.	.	.	×	.	.	.	.	.	.	.	.
<i>Polyophthalmus pictus</i> . . .	.	.	×	.	.	.	.	.	.	.	×	.
MALDANIDAE												
<i>Maldane sarsi</i> . . .	.	.	.	×	.	.	.	.	.	.	.	.
OWENIIDAE												
<i>Owenia fusiformis</i> . . .	.	.	.	×	.	.	.	.	.	.	.	.
SABELLARIIDAE												
<i>Sabellaria eupomatoides</i> . . .	.	.	×	.	×	×	.	.	.	.	.	.
" <i>spinulosa</i> var <i>intoshii</i> . . .	.	×	.	.	.	×	.	×	.	.	×	.
" <i>spinulosa</i> var <i>alcocki</i> . . .	.	.	.	.	.	.	.	.	.	×	.	.
STERNASPIDAE												
<i>Sternaspis scutata</i> var <i>africana</i> . . .	.	.	.	×	.	.	.	.	.	.	.	.
AMPHARETIDAE												
<i>Phyllamphicteis collaribranchis</i> . . .	.	.	.	×	.	.	.	.	.	.	.	.
<i>Pterolysippe bipennata</i> . . .	.	.	.	×	.	.	.	.	.	.	.	.
<i>Isolda whydahensis</i> . . .	.	.	.	×	.	.	.	.	.	.	.	.
TEREBELLIDAE												
<i>Pista grubei</i> . . .	.	.	.	×	.	.	.	.	.	.	.	.
<i>Terebellides stroemi</i> . . .	.	.	.	×	.	.	.	.	.	.	.	.
<i>Streblosoma persica</i> . . .	.	.	×	.	.	×	.	×	.	.	.	×
<i>Loimia medusa</i> . . .	.	.	.	×	.	.	.	.	.	.	.	.
<i>Amaea accraënsis</i> . . .	.	.	.	o	.	.	.	.	.	.	.	.
SABELLIDAE												
<i>Laonome puncturata</i> . . .	.	.	.	×	.	×	.	.	.	.	.	×
<i>Dasychone lucullana</i> . . .	.	.	.	×	.	.	.	.	.	.	.	.
<i>Potamilla casamancensis</i> . . .	.	.	.	×	.	.	.	.	.	.	.	.

List of Species and Distribution—cont.

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Species	Localities												
	Tenpobo and Pram Pram	Accra		Winneba	Apam	Sekondi	Dixcove	Princes Town	Axim				
		Intertidal	Off-shore						Hospital Reef	Lighthouse "	Shore		
SERPULIDAE													
<i>Salmacina incrustans</i>	.	.	.	×	.	.	×	×	.	.	×	.	.
<i>Hydroides norvegica</i>	.	.	.	.	.	.	.	.	.	.	.	.	.
„ <i>spinosus</i>	.	.	.	×	.	.	.	.	.	.	.	.	.
„ <i>arnoldi</i>	.	.	.	.	.	.	.	.	.	.	.	×	.
<i>Apomatus similis</i>	.	.	.	.	.	.	.	.	.	.	.	.	.
<i>Serpula vermicularis</i>	.	.	×	.	.	.	.	.	.	.	.	.	.
<i>Vermiliopsis multicristata</i>	.	.	.	×	.	.	.	.	.	.	.	.	.
„ <i>prampramiana</i>	.	.	×	.	.	.	.	.	.	.	.	.	.
<i>Spirorbis</i> sp.	.	.	.	.	.	.	.	.	.	.	.	.	.

Augener (1918) from the Cape Coast Castle.

4. SYSTEMATIC PART

(a) *Key to Families of Polychaeta*

The following key has been adapted from Fauvel (1923 and 1927a). It includes families not collected in the present survey and these have been marked with an asterisk.

1. Some parapodia bearing elytra, the rest with dorsal cirri **APHRODITIDAE.**
Parapodia without elytra 2.
2. A fan-shaped group of broad, flattened chaetae (paleae) on all segments
CHRYSOPTALIDAE.
No such groups of chaetae 3.
3. Prostomium not distinct; when present pedal cirri globular 4.
Prostomium distinct 6.
4. Parapodia biramous and achaetous; prostomium fused with the two succeeding segments and bearing 2 or 4 tentacular cirri containing aciculæ; pedalcirri absent.
Pelagic **TOMOPTERIDAE.***
Parapodia uniramous, with chaetae and with globular cirri 5.
5. Pharynx armed **PISIONIDAE.***
Pharynx unarmed **SPHAERODORIDAE.***
6. Body not normally divided into distinct regions; all segments alike except those near the mouth and the pygidium. Pharynx protrusible and normally armed with jaws. This group includes those families of the Polychaeta Errantia of Fauvel (1923) not given above 7.

- Body often divided into distinct regions and adapted to either a tubicolous or burrowing life, the head is, therefore, either greatly modified, with a wreath of tentacles or gills surrounding the mouth, or almost completely divested of cephalic appendages. Parapodia much modified in the tubicolous forms in which the neuropodia are often in the form of pinnules (tori) bearing hooks or uncini. Without jaws. This group includes the Polychaeta Sedentaria of Fauvel, 1927a
7. Prostomium conical, without antennae or palps; dorsal and ventral cirri foliaceous; chaetae rare, when present simple, acicular. Pelagic TYPHLOSCOLECIDAE.* 15.
 - Prostomium with tentacles, usually with palps 8.
 8. Prostomium small with three antennae; pharynx unarmed; a caruncle almost always present. Chaetae simple, calcareous in some genera AMPHINOMIDAE.
 - Prostomium prominent; without a caruncle 9.
 9. Prostomium long, conical, annulated, with four short terminal antennae GLYCERIDAE.
 - Prostomium not so 10.
 10. Proboscis without chitinous teeth 11.
 - Proboscis with chitinous teeth 14.
 11. Parapodia normally uniramous, cirri usually foliaceous 12.
 - Parapodia biramous or very much reduced 13.
 12. Prostomium with two very large globular eyes. Pelagic ALCIOPIDAE.*
 - Prostomium with two small eyes PHYLLODOCIDAE.
 13. Parapodia biramous, with inter-ramal cirri (branchiae) NEPHTHYDIDAE.
 - Parapodia biramous, or very much reduced, without branchiae HESIONIDAE.
 14. Proboscis with one pair of heavy curved jaws distally and normally with paragnaths on its dorsal and ventral surfaces NEREIDAE.
 - Proboscis with a complex armature—a pair of ventral pieces and two, or frequently more, dorsal pieces EUNICIDAE.
 - Proboscis with one large tooth, or crown of teeth, or both SYLLIDAE.
 15. Body clearly divided into distinct regions 23.
 - Body not clearly divided into distinct regions 16.
 16. Body very much swollen, few segments, filiform anal branchiae. A large ventral shield bordered with chaetae STERNASPIDAE.
 - Body not swollen, numerous segments, without anal branchiae. No ventral shield 17.
 17. Palps elongate 18.
 - Without palps 22.
 18. Elongate palps (tentacular cirri) on the body, not on the prostomium CIRRATULIDAE.
 - Elongate palps on the prostomium 19.
 19. A cephalic cage formed by the chaetae of the first chaetigers FLABELLIGERIDAE.
 - Without a cephalic cage 20.
 20. Without branchiae. Prostomium oval, spoon shaped. Palps with sucker-like papillae MAGELONIDAE.*
 - With branchiae 21.
 21. Parapodial lamellae erect, dorsal. Branchiae cirriform. Hooded hooks and capillary chaetae SPIONIDAE.
 - Anterior parapodial lamellae frilled or flask-shaped. Branchiae filliform. Chaetae of many kinds, plumed, spiny, barbed and acicular, etc. DISOMIDAE.*
 22. One median antenna. Dorsal foliaceous branchiae. Hooded hooks and capillary chaetae PARAONIDAE.*
 - Two antennae or none. Capillary and forked chaetae, no hooded hooks SCALIBREGMIDAE.*
 - Prostomium blunt, without appendages or with a crown of lobes. No branchiae.
 - Ventral tori with rows of uncini. Sandy tube OWENIIDAE.
 - Prostomium without appendages, with a keel or rimmed cephalic plate MALDANIDAE.

23. A terminal branchial tuft with numerous filaments. Thoracic uncini dorsal ; abdominal uncini ventral 32.
No terminal branchial tuft 24.
24. Paleae forming an operculum to close the tube 31.
No opercular paleae 25.
25. Prostomium without processes. Branchiae on many segments, but not on the prostomium 26.
Prostomium with processes, either branchiae or tentacular filaments 29.
26. With uncini 28.
Without uncini 27.
27. With acicular hooks or capillary chaetae ORBINIIDAE.
With no acicular hooks, only capillary chaetae OPHELIIDAE.
28. Prostomium blunt. Non-retractile arborescent branchiae in the middle body region ARENICOLIDAE.*
Prostomium conical. Branchiae, if present, posterior in position, simple or multifid, if multifid retractile CAPITELLIDAE.*
29. Body divided into 2-3 strikingly dissimilar regions. Prostomium with or without 2 small tentacles. Two long grooved palps. Anterior region short with uniramous feet bearing peculiar chaetae in the 4th chaetiger. Posterior notopodia erect. Uncini comb-like CHAETOPTERIDAE.*
Body divided into regions which are not strikingly dissimilar. With numerous tentacular filaments 30.
30. Tentacular cirri retractile into the mouth. Prostomium distinct . . . AMPHARETIDAE.
Tentacular cirri not retractile into the mouth. Prostomium indistinct . . . TEREBELLIDAE.
31. An operculum of one anterior row of golden paleae . . . AMPHICTENIDAE.
An operculum of two stalks bearing a crown of paleae . . . SABELLARIIDAE.
32. Tube calcareous, normally with an operculum . . . SERPULIDAE.
Tube membranaceous or mucous, never with an operculum . . . SABELLIDAE.

(b) *Glossary of Terms*

The following glossary includes only those terms which are not normally to be found in a standard text-book of zoology or English Dictionary.

ACICULA : A stout chaeta of one piece, almost always tapering to a blunt point.

CAPILLARY CHAETA : Simple chaeta, normally long and slender.

CARUNCLE : A longitudinal ridge on the dorsal surface of the prostomium and sometimes extending to some of the following segments.

CHAETA : A bristle made largely of chitin but exceptionally some may be composed of calcium carbonate (e.g. *Eurythoe complanata*). Chaetae are either simple (of one piece), or compound (having two or more articulating pieces).

FALCIGER : The terminal article of a compound chaeta when it is short and broad. *c.f.* SPINIGER.

HETEROGOMPH : The condition when the two lateral branches of the articulating surface of the main stem of a compound chaeta are unequal in length.

HOMOGOMPH : The condition when the two lateral branches of the articulating surface of the main stem of a compound chaeta are equal in length.

LIMBATE : The condition when a simple chaeta is bordered along all or part of its length, e.g. *Apomatus similis*, Text-fig. 30, *f.*

PALEA : A stout simple chaeta, groups of which appear in the Chrysopetalidae, Amphictenidae, Ampharetidae and Sabellariidae.

SESQUIRAMOUS : Condition of a parapodium when the dorsal component (notopodium) is reduced to a few chaetae or an acicula.

SPINIGER: The terminal article of a compound chaeta when it is long and slender. *c.f.*

FALCIGER.

STYLODE: A dorsal appendage of the branchial filaments in some Sabellidae.

UNCINUS: A short simple chaeta which may be sigmoid, with teeth at the tip, or plate-like with rows of teeth along one edge.

(c) *Descriptions of Species*

Keys to genera and species have been compiled only in respect of forms actually recorded from the Gold Coast, or where systematic considerations suggest that details of related forms will be of help to the student.

Examples of all species have been deposited in the collections of the B.M. (N.H.), Reg. Nos., 1953.3.1.1-1234; duplicate material covering the majority of species, has been deposited in the Zoology Dept., University College, Achimota, Gold Coast.

Family APHRODITIDAE

Prostomium normally with four sessile, or pedunculate, eyes, one to three antennae and two palps inserted ventrally. Protrusible proboscis crowned with papillae and with four chitinous jaws (except the Aphroditinae). A feature of this family is the possession of elytra on the dorsal surface of the parapodia. The first pairs are always attached to segments 2, 4, 5 and 7, thereafter the arrangement varies, posteriorly they may be absent. Parapodia biramous, exceptionally reduced.

KEY TO SUBFAMILIES

1. Body short, fat and oval, jaws absent or rudimentary. Elytra may be covered with a thick mat of felt APHRODITINAE.
Body comparatively long and thin, pharynx with jaws. Elytra never covered with a mat of felt 2.
2. Compound chaetae in the neuropodia. Elytra on all segments posteriorly SIGALIONINAE.
All chaetae simple. Elytra on every second or third segment, or entirely absent, from the posterior part of the body 3.
3. Elytra on every second segment in the posterior part of the body. Prostomial eyes sessile or stalked. Tubicolous in habit POLYDONTINAE.
Elytra on every third segment in the posterior part of the body, or entirely absent. Prostomial eyes sessile, never stalked. Errantiate in habit POLYNOINAE.

Subfamily APHRODITINAE

One unpaired antenna, no laterals; a facial tubercle beneath the antenna. Elytra 15 pairs, rarely 20, inserted on segments 2, 4, 5, 7, 9-21, 23, 25, 28, 31, alternating with dorsal cirri.

KEY TO GENERA

1. Dorsal surface covered with a thick felt; dorsal notopodial chaetae ending in blunt points or with fine hooks *Aphrodite*.
2. No covering of felt; notopodial chaetae harpoon-shaped on elytrigerous segments *Hermione*.

Genus *APHRODITE* Linnaeus, 1758

Fifteen pairs of elytra. Eyes sessile or absent.

Aphrodite alta Kinberg, 1856

Aphrodite alta, McIntosh, 1924, pp. 5-6, from Cape of Good Hope waters.

Aphrodite alta, Monro, 1930, pp. 36-38, fig. 5a-i, from 64° 20' 00" S., 63° 01' 00" W.

LOCALITIES. Off Accra : Stn. 47 (1) ; Stn. 110 (1) ; Stn. 133 (1) ; all complete, 20 mm. long by 10 mm. wide.

This species is characterized by the lack of eyes, the dorsal notopodial chaetae which taper to a fine hooked point, and which appear to lie in the dorsal felt rather than to project through it, the thick bearded ends of the neuropodial chaetae and the posterior neuropodial chaetae with long alternating teeth. These features clearly distinguish the species from *A. aculeata* which Fauvel (1950) reported from Rio de Oro.

DISTRIBUTION. This appears to be the first record of *A. alta* from the W. coast of Africa, north of the Cape. Kinberg (1856) reported it from Rio de Janeiro.

Genus *HERMIONE* Blainville, 1828

Four pedunculate eyes. Fifteen pairs of elytra.

Hermione hystrix (Savigny), 1818

Hermione hystrix, Fauvel, 1923, pp. 35-36, fig. 11.

LOCALITY. Off Accra, Stn. 126 (12), all complete, measuring between 20-30 mm. long by 10-15 mm. wide.

There are two pairs of eyes, each pair carried on a peduncle, situated ventral to the antenna. Two types of notopodial chaetae are present on elytrigerous segments ; one set, stout, curved and ending in a simple point, the others with strong, harpoon-shaped points. On cirriferous segments there are only thin chaetae with simple points. Neuropodial chaetae are bifurcate with a short limb and a long curved one which may be toothed on anterior and posterior feet.

DISTRIBUTION. Mediterranean Sea, Atlantic Ocean and Indo-Pacific regions.

Subfamily POLYDONTINAE

Bilobed prostomium, with four sessile eyes, or two large ommatophores and three antennae. Elytra on segments, 2, 4, 5, 7, 9, etc.

Only one genus of this subfamily has been recorded from the Gold Coast, *Panthalis*, but the following Key is included here to illustrate the difference between it and *Polyodontes*.

1. Superior neuropodial chaetae elongate hastate, the tip smooth or more or less hirsute *Polyodontes*.
2. Superior neuropodial chaetae penicillate (Text-fig. 1) *Panthalis*.

Hartman (1939) has drawn attention to the need for revising the diagnostic generic characters in this subfamily and this Key has been adopted from her suggestions. Thus the presence or absence of branchial lobes is of doubtful value, for many specimens are incomplete when collected and the methods adopted for preservation frequently result in the complete retraction of these organs.

Genus *PANTHALIS* Kinberg, 1855

Panthalis bicolor Grube, 1877

Polyodontes bicolor, Augener, 1918, pp. 119-125, pl. 2, fig. 28; pl. 3, fig. 47; text-fig. 4. From Accra.

LOCALITIES. Off Accra, Stn. 33 (1), anterior fragment 23 mm. in length; Buchanan Survey, in a depth of 3.6 to 11.0 metres (1), anterior fragment, 10 mm. long; Buchanan Survey, in a depth of 10 metres off lighthouse (1), anterior fragment, 17 mm. long.

The prostomium carries two large anterior ommatophores (eye-stalks) and two small posterior eye-spots, situated on either side of the median antenna, which projects forward between the ommatophores. Two lateral antennae are ventral to the eye-stalks. There are two pairs of tentacular cirri. Spinning glands are present in the feet. Neuropodial chaetae are illustrated in Text-fig. 1, (a) superior penicillate with the tip frequently carried beyond the bushy portion, (b) median stout aristate, (c) inferior serrulate.

No tubes were found with these specimens.

DISTRIBUTION. The species is known only from the tropical West African coast.

Subfamily SIGALIONINAE

Elytra numerous, attached to segments 2, 4, 5, 7, etc., and on each segment from the 23rd-29th up to the end of the body. All the genera here reported have three antennae; other genera, however, have one (*Pholoë*) or two (*Sigalion*).

KEY TO GENERA

- | | | |
|----|---|-----------------------|
| 1. | With a dorsal cirrus on the 3rd chaetiger | 2. |
| | Without a dorsal cirrus on the 3rd chaetiger | 3. |
| 2. | With the unpaired antenna inserted on the anterior margin of the prostomium | |
| | | <i>Euthalenessa</i> . |
| | With the unpaired antenna inserted on the middle of the prostomium, in line with, | |
| | or posterior to, the eyes | <i>Eusigalion</i> . |
| 3. | With falcigerous compound chaetae in the neuropodium | <i>Sthenelais</i> . |
| | With spinigerous compound chaetae in the neuropodium | <i>Leanira</i> . |

Genus *EUTHALENESSA* Darboux, 1899

The median unpaired antenna, without ceratophore or ctenidia, is on the anterior margin of the prostomium. From the fourth chaetiger dorsal ctenidia are present on the parapodia; on the third foot there is a branchial tubercle but no true dorsal cirrus.



FIG. 1. *Panthalis bicolor*. Neuropodial chaetae; (a) superior penicillate; (b) median aristate; (c) inferior serrulate, $\times 200$. (Specimen from the Buchanan Survey.)

Euthalenessa insignis Ehlers, 1908

Euthalenessa insignis Augener, 1918, pp. 108-112, from Apam.

This species has not been found in the present collections.

The specimens described by Augener were characterized by the possession of a third cirrus on the first chaetiger, and it is doubtful if this character is applicable to Ehler's species, but specimens will have to be examined before the true identity of Augener's record can be established.

Genus *EUSIGALION*, Augener, 1918

The median antenna is in the middle of the prostomium, between, or posterior to, the eyes. This character is here taken to separate *Eusigalion* from *Euthalenessa*, which are similar in other respects.

Eusigalion vazensis Augener, 1918

Eusigalion vazensis Augener, 1918, pp. 113-118, pl. 2, fig. 14; pl. 3, figs. 44-46; text-fig. 3. From Fernand Vaz in the French Congo.

LOCALITY. Off Accra, Buchanan survey, in 3.6 to 11.0 metres depth (2), anterior pieces, 20-23 mm. long.

There are about 12 pinnate filaments on the outside edge of each elytron. Antennae are very short, the unpaired median is set back on the dorsal surface of the prostomium, between the two pairs of small eyes; the paired anterior antennae project from the front border of the prostomium. Notopodial simple chaetae are long, barred and serrated. Neuropodial chaetae are in two groups; a supra-acicula group of simple spinose bristles and long-shafted compound forms with numerous joints, and a sub-acicula group, all compound, one set with single long-shafted, bifid, terminal articles, the other with numerous articles of which the terminal one is also bifid.

DISTRIBUTION. Only known from the above records.

Genus *STHENELAIS* Kinberg, 1855

Prostomium with four eyes. The lateral antennae are fused with the first chaetiger. Unpaired median antenna with basal ctenidia. Two long palps with ctenidia at the base. Branchiae on all parapodia from the fourth. Notopodial chaetae simple; neuropodial chaetae compound falcigers with sometimes a superior group of simple bristles.

KEY TO SPECIES

- | | |
|---|----------------------|
| 1. Elytra with simple fringes and entire borders | <i>S. boa</i> . |
| 2. Anterior elytra with bifid fringes; elytra from the 24th chaetiger with outside border notched | <i>S. limicola</i> . |

Sthenelais boa (Johnston), 1833

Sthenelais boa, Fauvel, 1923, pp. 110-111, fig. 41, a-l.

LOCALITY. Tenpobo shore, 6.ii.50 (1), 43 mm. long.

Elytra normally reniform, crossing and overlapping on the back, with minute papillae and with simple fringes on the outer border. Notopodial chaetae simple, finely spinous. Superior neuropodial chaetae simple, bi-pectinate, strongly spinous, the middle group compound falcigers with single bidentate articles, the inferior group also compound with long, pseudo-multiarticulate, bidentate falcigers.

Distribution. English Channel, Mediterranean Sea, Atlantic Ocean, Indian Ocean.

Sthenelais limicola (Ehlers), 1864

Sthenelais limicola, Fauvel, 1923, pp. 113-114, fig. 42, a-g.

LOCALITY. Off Accra, Buchanan Survey, in 3.6-11.0 metres depth (4), two complete, 60, 75 mm. in length, two fragments 23 and 56 mm. long.

The characters noted in the above key serve to separate this species from *S. boa* ; in other characters the species are similar.

DISTRIBUTION. North Sea, Mediterranean Sea, Atlantic Ocean.

Genus *LEANIRA* Kinberg, 1855

Members of this genus may, or may not, have eyes ; otherwise they are similar to *Sthenelais*, except as keyed above.

KEY TO SPECIES

1. Superior neuropodial chaetae simple, with whorls of spikes ; inferior neuropodial chaetae compound, caniculate spinigers *L. japonica*.
2. All neuropodial chaetae compound, caniculate spinigers *L. yhleni*.

Leanira japonica McIntosh, 1885

Sthenolepis japonica, Willey, 1905, pp. 259-260, pl. 2, fig. 49.

Leanira japonica, Fauvel, 1932, pp. 33-34.

LOCALITIES. Off Accra, Stn. 57 (1) ; Stn. 70 (3) ; Stn. 97 (1) ; Stn. 132 (1) ; Stn. 133 (2). One of the specimens from Stn. 70 is complete, 64 mm. in length. All others are fragmentary, up to 15 mm. long.

Prostomium with four eyes. The dorsal cirrus is replaced in this species by a very small tubercle. The elytra, which are fringed, overlap but do not cross, and leave a considerable area of the mid-dorsal surface exposed. Notopodial chaetae are long and slender, neuropodial compound chaetae have long caniculate terminal pieces and a superior group of simple chaetae, with whorls of spikes, on most parapodia.

DISTRIBUTION. Previously reported from Japan, Malaya, Bay of Bengal and the Arabian Sea, this appears to be the first record of this species from the Atlantic Ocean.

Leanira yhleni Malmgren, 1867

Leanira yhleni, Fauvel, 1923, pp. 117-118 (no figures).

LOCALITY. Off Accra, Buchanan Survey, 41·4 metres depth, off Lagoon, (1), anterior fragment 25 mm. long.

This species is distinguishable from *L. japonica* as noted above in the key, and in having the anterior pair of eyes larger than the posterior pair. In *L. japonica* the posterior eyes are larger than the anterior. In both species the anterior eyes are near the front border of the prostomium, partly hidden beneath the antennal ctenidia, and the posterior pair are at the base of the unpaired antenna.

DISTRIBUTION. Bay of Biscay, Mediterranean Sea, Adriatic Sea ; this appears to be the first record from the equatorial Atlantic.

Subfamily POLYNOINAE

Elytra 12 or more pairs inserted on segments 2, 4, 5, 7, 9, to 23-26, thence on every third segment to the posterior end of the body. All genera here reported have one unpaired, median antenna and two paired, lateral antennae.

KEY TO GENERA

1. Lateral antennae inserted ventrally; 15 pairs of elytra 2.
 Lateral antennae inserted terminally, continuous with the prostomial peaks 3.
2. Chaetae transparent as crystal, with spinous pouches *Scalisetosus*.
 Chaetae not transparent, without spinous pouches *Harmothoë*.
3. Elytra numerous, more than 15 pairs, a large dorsal tubercle in the form of a T on
 the cirriferous segments *Acholoë*.
 Elytra 12 pairs 4.
4. Segment 3 fused with the segments 2 and 4 dorsally *Pareulepis*.
 Segment 3 not fused dorsally *Lepidonotus*.

Genus *SCALISETOSUS* McIntosh, 1885

The 15 pairs of elytra are inserted on segments 2, 4, 5, 7-23, 26-29-32, not covering the whole body. Neuropodial chaetae with semilunar cusps are slightly bifid at the extremity. Notopodial chaetae curved with blunt spines.

Scalisetosus pellucidus (Ehlers), 1864

Scalisetosus pellucidus, Fauvel, 1923, p. 74, fig. 27, a-f.

LOCALITY. Off Accra, stn. 47 (1), 10 mm. in length.

Irregular dark brown transverse bands decorate the dorsal surface. Antennae and cirri are papillated. The ventral chaetae are not as deeply incised at their distal ends and the notopodial chaetae not so clearly notched as normal representatives of the species.

DISTRIBUTION. Mediterranean Sea, Atlantic Ocean, Bay of Bengal, Malay Archipelago.

Genus *ACHOLOË* Claparède, 1870

Two pairs of tentacular cirri with basal aciculae. Elytra on segments 2, 4, 5, 7-23, 26, 29, 32, thence almost up to the end of the body. Parapodia with reduced notopodia.

Acholoë astericola (Delle Chiaje), 1823

Acholoë astericola, Fauvel, 1923, pp. 94-95, fig. 36, d-h.

LOCALITIES. Off Accra: From starfish, at 25 metres, and 10 metres (off Petrol Buoy), numerous specimens; Stn. 57 (1), among tubes of *Diopatra neapolitana*; Stn. 67 (1); Stn. 80 (1); Stn. 89 (1); Stn. 104 (1); Stn. 123 (1).

Most of these specimens are fragmentary, the complete ones measure up to 30 mm. long.

There are about 45 pairs of elytra. Neuropodial chaetae have a recurved unidentate tip with a short spinous region, and notopodial chaetae are short with transverse rows of pinnules.

Distribution. English Channel, Mediterranean Sea, Atlantic Ocean.

Genus *PAREULEPIS* Darboux, 1899

Segment 3 fused with segments 2 and 4 dorsally. Elytra on segments 2, 4, 5, 7, 9, 11-21-24. Notopodial chaetae are slender capillaries and stout curved bristles bent abruptly at their distal ends. Neuropodial aciculae are short, wholly embedded, with extended, plate-like terminations. Neuropodial chaetae include a few small, laterally pectinate, bristles, and a bundle of almost straight chaetae.

Pareulepis geayi (Fauvel), 1918

Eulepis geayi, Fauvel, 1919, pp. 335-339, pl. 15, figs. 17-21; pl. 17, figs. 76-79.

LOCALITY. Off Accra, Buchanan Survey, between 11-13 metres depth, off Christiansborg Castle (2), each about 25 mm. long.

The arrangement of anterior segments in this species is shown in Text-fig. 2. Thus segment 3 is represented laterally by parapodia, but is fused dorsally with segments

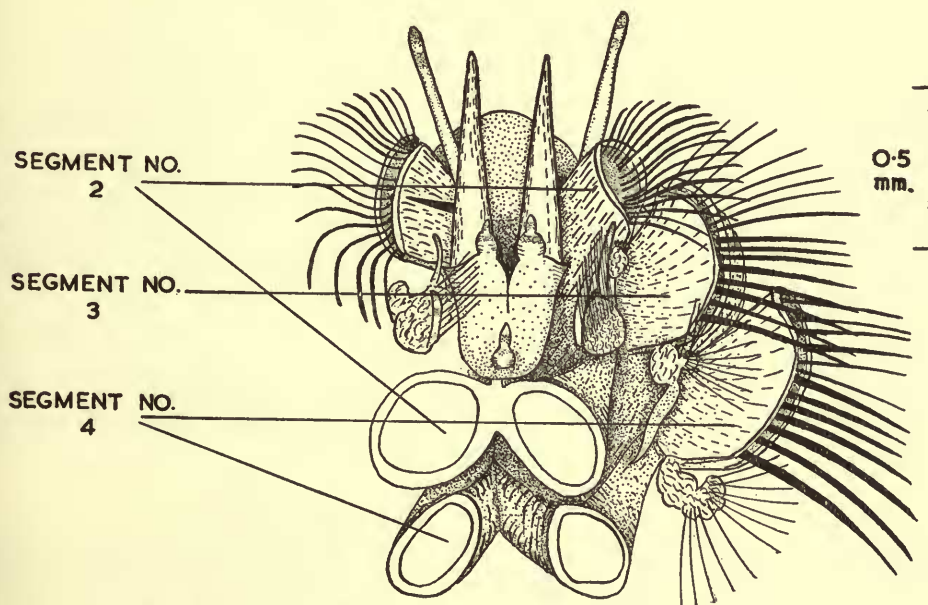


FIG. 2. *Pareulepis geayi*. Dorsal view of anterior segments to show the fusion of segment 3 with segments 2 and 4 dorsally. Elytra and the 2nd and 3rd parapodia on the left-hand side have been omitted.

2 and 4. Elytra are present therefore on segments 2, 4, 5, 7, 9-21-24, after which there are ten cirriferous segments up to the end of the body. The elytra on segment 24 extends from segment 23 backwards to 29, so that only a small posterior portion of the worm remains uncovered. There are up to 12 marginal papillae on the outside border of each elytron. Dorsal cirri are stout and foliaceous throughout.

The specimens here described have been referred to this species, and not to *P. fimbriata* Treadwell, with which Hartman (1939) considers *P. geayi* synonymous,

because of the position of the unpaired median antenna. Fauvel (1919, p. 338) clearly implies that the unpaired antenna is posterior to the median line of the prostomium. Treadwell (1900, p. 190), however, places it on the anterior prostomial margin. Too, Treadwell's specimens had eye-spots; these are not present in Fauvel's species.

DISTRIBUTION. This species appears to have been recorded only from the Indo-Pacific region, though the genus, through *P. fimbriata*, is also known from the Pacific coast of America.

Genus *LEPIDONOTUS* Leach, 1816

Prostomium bilobed, without frontal horns, four eyes. Twelve pairs of elytra attached to segments 2, 4, 5, 7-21, 23.

Lepidonotus hupferi Augener, 1918

Lepidonotus hupferi Augener, 1918, pp. 133-136, pl. 2, figs. 7-11; text-fig. 5.

LOCALITIES. (1) Tenpobo shore (10), most complete, between 8-18 mm. in length, collected in February, 1950. (2) Off Accra, from wood netted off Chorkor in 14 metres, 14.v.51 (1), 10 mm. long. (3) Axim, (a) Shore, 13/14.iv.49 (1), 12 mm. long; (b) Hospital Reef (4), 2 complete, 4 and 6 mm. long; 2 parts 4 and 8 mm. long.

The elytra completely cover the dorsal surface, are fringed on their external margins, and covered with very small tubercles, with a broad base and slender stalk. Notopodial chaetae are slender and serrated. Neuropodial chaetae are stout with a serrulated blade; some are distally entire, others have a slightly bifid tip.

Fauvel (1950) has noted that this species appears to replace *L. squamatus* in the tropical zone.

DISTRIBUTION. Tropical West Africa, Western Mexico, Panama, N.W. South America. Hartman (1939) records this Western Hemisphere distribution from the intertidal zone to 22 metres.

Genus *HARMOTHÖE* Kinberg, 1855

Prostomium bilobed, with four eyes, often with lateral peaks. Elytra covering all the dorsal surface on segments 2, 4, 5, 7-23, 26, 29, 32.

Harmothoe goreensis Augener, 1918

Harmothoe goreensis Augener, 1918, pp. 142-146, pl. 2, figs. 4-6; pl. 3, fig. 42; text-fig. 7.

LOCALITIES. Off Accra: (a) Stn. 47, (1), 8 mm. long; (b) from wood netted off Chorkor in 14 m., (4); (c) 2 miles out from R. Densu, 8.iv.49, 14.6 m., in shingle, (4), 2 complete, 6 mm. long; (d) 2 miles west out from R. Densu, 1 mile off shore, 2.iii.49, 7.3 m., (1), 4 mm. long.

The elytra have short fringes on their external margins; elytron tubercles are sac-like in shape with a minute distal pore. Tentacular cirri, dorsal cirri and palps are covered with papillae. Neuropodial chaetae are normally bidentate superiorly

and inferiorly are unindentate. Notopodial chaetae (always stouter than neuropodial bristles in *Harmothoe*) are distally entire and heavily serrated.

DISTRIBUTION. Previously recorded from Senegal and Angola.

Family CHRYSOPETALIDAE

Dorsal surface of the segments bearing a fan or transverse row of paleae. Prostomium with four eyes and three antennae. Biramous parapodia, with dorsal cirri on all segments.

Genus *BHAWANIA* Schmarda, 1861

The head is exceedingly small and not easily seen; the elongated body consists of numerous segments. Neuropodial chaetae are compound.

Bhawania goodei Webster, 1884

Bhawania goodei, Augener, 1918, pp. 98-103, pl. 2, figs. 1-2; text-fig. 1; from Pram Pram.

LOCALITIES. (1) Accra, Christiansborg shore (1), almost complete, 8 mm. long. (2) Axim, Hospital Reef, 7.1.51 (1), middle body piece, about 14 mm. long.

It has not been possible to examine the head in either of these specimens, since, in the specimen from Accra, it has been damaged and it is missing from the Axim example. The neuropodial heterogomph spinigers and falcigers are as figured by Augener, but the paleae, which are of one type, are as shown in Text-fig. 3 and not as illustrated by Augener. Monro (1933) noted that the tips of the paleae were not emarginate.

DISTRIBUTION. Apart from the above records *B. goodei* has been recorded from Bermuda and False Bay, South Africa, in the Atlantic Ocean, and from the Galapagos Islands and Taboga Island, Panama Bay, in the Pacific Ocean.

Family AMPHINOMIDAE

Body depressed, prostomium deeply set into the anterior segments, carrying three antennae, two palpal pads and a caruncle. Biramous parapodia with branchiae and simple chaetae (exceptionally uniramous with compound hooks).

KEY TO GENERA

1. Body short and oval; branchiae pinnate *Chloeia*.
- Body long and vermiform; branchiae bushy 2.
2. Branchiae beginning on the 1st chaetiger; caruncle cushion-like, with dorsal surface with chevron crenulations *Hermodice*.
- Branchiae beginning on the 2nd. or 3rd. chaetiger; caruncle with a ventral crenulate portion *Eurythoe*.

Genus *CHLOEIA* Savigny, 1818

Caruncle a plaited crest on a horizontal plate.

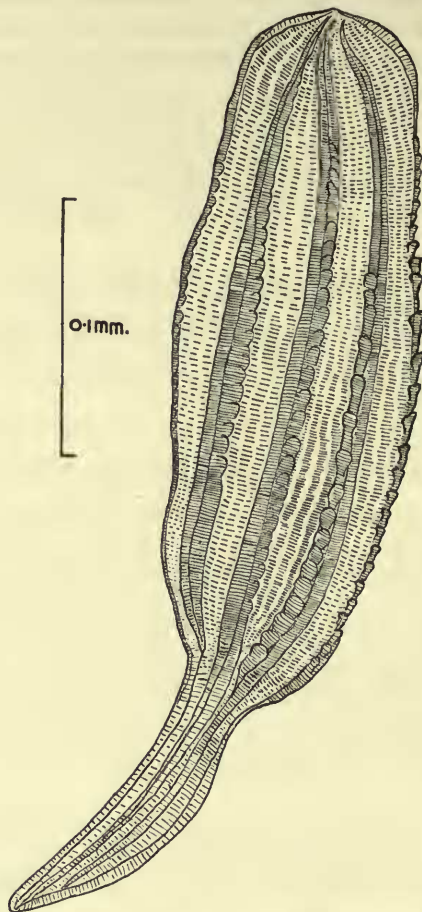


FIG. 3. *Bhawania goodei*. One of the paleae from the dorsal surface.
(Specimen from Axim.)

***Chloeia viridis* Schmarda, 1861**

Chloeia euglochis, Ehlers, 1887, pp. 18-24, pl. 1, figs. 1-2; pl. 2, figs. 1-8; pl. 3, figs. 1-4.
Chloeia euglochis, Augener, 1918, pp. 94-95, from Gorée, Senegal.

LOCALITY. Off Accra, Buchanan Survey, in 40 metres off Christiansborg (1), 70 mm. long by 10 mm. wide.

This is one of the few species of Polychaeta in which the pigment is retained, even after long periods in preservative fluid. Thus, in this single specimen, the dorsal cirri are violet, the pinnate gills, which appear at the fifth chaetiger, edged with purple, whilst the superior neuropodial chaetae are a brilliant orange, as are a few in the notopodial group. The remaining chaetae are glistening white, and the worm presents a striking appearance. The caruncle is attached to the body to the second chaetiger, though its unattached portion projects for 2-3 more segments, and it is

surmounted throughout its length by a conspicuous, mid-dorsal, dark purple line. Another thin mid-dorsal purple line, which is slightly broken in the intersegmental furrows, extends along the back of the worm.

DISTRIBUTION. This species is also known from the W. Indies, Gulf of California, Galapagos and Cocos Islands.

Genus *HERMODICE* Kinberg, 1857

Caruncle cushion-like, with chevron crenulations on the dorsal surface.

Hermodice carunculata (Pallas) var. *didymobranchiata* (Baird), 1864

Amphinome didymobranchiata Baird, 1864, pp. 449-450, pl. 45, figs. 1-7; from Ascension Island.

Hermodice carunculata var. *didymobranchiata*, Fauvel, 1914, pp. 113-116, pl. 8, figs. 22-27, 31-32; from the Gulf of Guinea.

Hermodice carunculata var. *didymobranchiata*, Monro, 1930, p. 27; from the Gulf of Guinea and the French Congo.

LOCALITIES. Off Accra: Stn. 47 (3), 12, 20 and 30 mm. long; Stn. 115 (6), largest 40 mm. long, smallest 16 mm.; Stn. 131 (1), 25 mm. long; Stn. 133 (3), 2 complete, about 20 mm. long.

Most of these specimens have lost their colour except for the thin dark intersegmental bands on the back. The caruncle extends to the 4th chaetiger. Separation of the branchiae into two bushy lobes instead of one and the almost complete absence of harpoon-shaped dorsal chaetae, separates this variety from the stem species.

DISTRIBUTION. This variety appears to have been recorded only from the above listed areas.

Genus *EURYTHOË* Kinberg, 1857

Caruncle with vertical folds along the lateral walls, and with a vertical crenulate portion.

KEY TO SPECIES

1. Branchiae beginning on the second segment. Caruncle terminating on the third or fourth segment. Four eyes *E. complanata*.
2. Branchiae beginning on the third segment. Caruncle terminating on the first segment. Four eyes *E. parvecarunculata*.

Eurythoë complanata (Pallas), 1766

Eurythoë complanata, Augener, 1918, pp. 88-89; from the Islands of Rolas and Annobon.

Eurythoë complanata, Fauvel, 1932, pp. 45-46.

LOCALITIES. (1) Tenpobo shore (70+). (2) Dixcove shore (7). (3) Axim, (a) Hospital Reef (1), posterior fragment; (b) Shore (1), small specimen.

These specimens vary considerably in length, the largest being about 100 mm. long, and the smallest 15 mm.

Notopodial chaetae are of three types: (a) stout, straight and blunt; (b) long and calcareous, with a slender tip having a slight spur at the base; (c) long harpoon-

shaped, with lateral rows of teeth, and neuropodial chaetae of two forms: (a) stout furcate chaetae with unequal arms; (b) a few subfurcate with one arm thin and elongated.

DISTRIBUTION. This species is well known from littoral regions of the tropical Atlantic, Pacific and Indian Oceans.

Eurythoë parvecarunculata Horst, 1912

Eurythoë parvecarunculata, Augener 1918, pp. 90-93, pl. 2, fig. 3; pl. 3, figs. 37, 38, from Cameroons and Spanish Guinea.

Eurythoë parvecarunculata, Fauvel 1927b, pp. 525-526, fig. 1 a-h, from Cameroons and French Guinea.

LOCALITIES. Off Accra: Stn. 12 (1), anterior piece 17 mm. long; Stn. 16 (2), anterior pieces 10 mm. and 15 mm. long; Stn. 32 (3), two 20 mm. long, one 30 mm. long; Buchanan Survey, off Accra, in $3\frac{1}{2}$ -11 metres, (1).

There are stout, harpoon-shaped, and slender, elongated, bifurcated chaetae in the notopodial group. The bifurcation in the slender bristles may be reduced to a spur. The neuropodial chaetae are furcate, slightly denticulate.

DISTRIBUTION. This species is also known from the Indian Ocean, from Natal to Malaya.

Family PHYLLODOCIDAE

Body normally long and slender with numerous segments. Prostomium variable in outline, with two eyes and four or five antennae. Smooth or papillate proboscis, protrusible and unarmed. Segments 1-3 bearing tentacular cirri. Parapodia uniramous, with foliaceous dorsal cirri and compound chaetae.

KEY TO GENERA

- | | |
|---|-------------------------------|
| 1. With 4 pairs of tentacular cirri | 2. |
| With 2 pairs of tentacular cirri | <i>Eteone</i> . |
| 2. With 5 antennae | <i>Eulalia</i> . ¹ |
| With 4 antennae | <i>Phyllodoce</i> . |

¹ Not recorded from the Gold Coast.

Genus *PHYLLODOCE* Savigny, 1822

The four pairs of tentacular cirri are arranged on the three segments—1 : 2 : 1. Two anal cirri.

KEY TO SUBGENERA

- | | |
|--|------------------------|
| 1. Protruded proboscis proximally set with longitudinal rows of papillae . . . | (<i>Anaitides</i>). |
| 2. Protruded proboscis proximally set with diffuse papillae . . . | (<i>Phyllodoce</i>). |

KEY TO SPECIES OF *Anaitides*

- | | |
|---|----------------------|
| 1. With more than 12 rows of papillae forming a continuous series around the proximal half of the proboscis | <i>A. africana</i> . |
| 2. With 12 rows of papillae arranged in two lateral groups of 6 on the proximal half of the proboscis | <i>A. oculata</i> . |

Phyllodoce (Anaitides) africana Augener, 1918

Phyllodoce africana Augener, 1918, pp. 171-174, pl. 2, fig. 25; pl. 3, fig. 49-51; text-fig. 11.

LOCALITY. Off Accra, Stn. 52, (1), incomplete, 24 mm. long.

The protruded proboscis is provided with a crown of six large bulbous papillae, from which run six longitudinal rows of eight similar papillae. These rows are followed by 24 longitudinal rows of about 14 much smaller papillae. Dorsal cirri broadly foliaceous throughout, ventral cirri slender, those situated posteriorly acquiring a pointed tip.

DISTRIBUTION. This species has been previously recorded only from Angola and Senegal.

Phyllodoce (Anaitides) oculata Ehlers, 1887

Phyllodoce (Anaitides) oculata, Augener, 1918, pp. 169-171, pl. 3, figs. 57-58, from Accra.

This species has not been found in the present survey.

Distally the proboscis is similar to the condition in *A. africana*, but the proximal portion has only 12 rows of papillae, and these are disposed in two lateral groups of six. Dorsal cirri become slender in the middle of the body.

DISTRIBUTION. The W. Indies, Gulf of Guinea, Ascension Island and Tristan da Cunha.

Genus *ETEONE* Savigny, 1822

Dorsal cirrus absent on the 2nd segment. Proboscis smooth, or with soft papillae and small cuticularized tubercles.

KEY TO SUBGENERA

1. Proboscis smooth or with soft papillae (*Eteone*).
2. Proboscis with lateral rows of large soft papillae and small spinous tubercles (*Mysta*).

Eteone (Mysta) picta Quatrefages, 1865

Eteone (Mysta) picta, Fauvel, 1923, pp. 176-177, fig. 64, a-g.

LOCALITIES. Off Accra: Stn. 57 (1), 15 mm. long, incomplete; Stn. 69 (2), 1 complete 17 mm., the other incomplete, 37 mm. long; Buchanan Survey, 3.6 to 11.0 metres (4), 3 complete, 31, 38 and 42 mm. long.

For description these specimens may conveniently be divided into two groups: one representing the young or immature form, the other the adult or sexually mature condition.

(a) *The immature forms* (from Stns. 57 and 69). In these specimens the prostomium bears two clear indentations on either side. The protruded proboscis is crowned by an encircling group of large soft papillae, whilst two longitudinal rows of equally large papillae extend laterally along the greater part of its length. Elsewhere there are small papillae with soft chitinous teeth (Text-fig. 4, a). The dorsal surface of the body in the specimen from Stn. 69 is marked with pale red-brown lateral stripes,

although the effect of preservation may give the uniform stripes a speckled appearance. In the specimen from Stn. 57 the colour is uniformly light brown, with dark markings towards the sides. All specimens have the base of the foliaceous dorsal cirrus coloured in pattern with the colouration of the adjacent dorsal surface of the body. The remainder of the dorsal cirrus is greyish white or yellow, there being a suture between these two clearly defined areas. Compound chaetae have long terminal articles and project much further from the body than the cirri. On the articu-



FIG. 4. *Mysta picta*. (a) Small papilla, with chitinous teeth, from the proboscis, $\times 700$; (b) compound chaeta, $\times 500$. (Specimen from Stn. 69.)

lating surface of the main stem of the chaetae there are two teeth, as well as a small finely pectinate plate (Text-fig. 4, b).

(b) *The sexually mature forms* (Buchanan Survey collections). In two of these specimens the colour pattern is similar to that in the specimens described in group (a), but the posterior parapodia contain small eggs, in which the nuclei are not visible. The suture on the dorsal cirrus, however, is clearly seen and appears to segregate a basal sac-like portion from a terminal solid piece. One of the remaining specimens has much longer dorsal cirri extending posteriorly from the middle of the body. In the anterior and middle regions of the dorsal surface the body is without colour

but gradually becomes light bronze posteriorly. The lateral body-wall and the basal sac-like portion of the parapodia, from behind the middle region of the body are rich blood red, whilst the tips of the dorsal cirri are yellow. The basal portion contains numerous large eggs, with visible nuclei; the eggs are so large and numerous that they produce a considerable swelling of the body-wall. The remaining specimen has very much enlarged dorsal cirri from the 37th chaetiger, at which point the dorsal body-wall and the bases of the parapodia have assumed a bronze colour, whilst the tips of the dorsal cirri are yellow. Anterior to the 37th chaetiger the colour is similar to that in specimens described in group (a). The parapodia, posteriorly from the 37th chaetiger, all contain eggs, the number to each segment increasing towards the hinder end of the body, whilst the chaetae only project as far as the dorsal cirri. Constant reference has been made to the prominent suture on the dorsal cirrus in all the specimens here described, and examination of the mature specimens indicates that the eggs collect in the basal sac-like portion of the parapodia, and it is here suggested that the suture may represent the line of rupture when the eggs are liberated through the body wall, into the sea, for external fertilization.

That these specimens represent a series from the immature to the sexually mature condition is a supposition which can only be confirmed through observation on the living animal. But the conclusion here reached—that all the specimens are of the same species—appears justifiable, particularly when the variation in related genera and families during their life histories is considered.

DISTRIBUTION. This appears to be the first record of the species from the Equatorial Atlantic. Previously, *E. (M.) picta* has been reported from the North Sea, the English Channel, the west coast of Scotland, the Bay of Biscay and the Mediterranean.

Family HESIONIDAE

Body short, cylindrical. Prostomium simple or bilobed, normally with four eyes, two or three antennae and two biarticulate palps. Protrusible proboscis with or without jaws. Parapodia biramous, or reduced with long dorsal cirri and both simple and compound chaetae.

Genus *LEOCRATES* Kinberg, 1865

Prostomium with four eyes, three antennae and two palps. There are eight pairs of tentacular cirri. Proboscis with chitinous jaws. Parapodia biramous, notopodial chaetae simple, neuropodial chaetae compound.

Leocrates claparedii (Costa), 1868

Tyrrhena claparedii, Claparède, 1868, pp. 228–231, pl. 18, fig. 3.

Leocrates claparedii, Fauvel, 1923, pp. 237–238, fig. 88, *i-n*.

LOCALITY. Axim, Hospital Reef, 13.iv.49 (1), complete, 18 mm. long.

In this species the upper jaw plates have only one tooth, which distinguishes it from *L. atlanticus*, with two teeth, reported by Fauvel (1950) from Dakar. The median antenna in *L. claparedii* is short and subulate; the paired laterals slender

and slightly longer than the palps. Notopodial chaetae appear at the 5th chaetiger and are simple and spinous: neuropodial chaetae have a bidentate sickle-shaped terminal piece. There are 17 segments bearing parapodia, the last pair being achaetous, retaining only the notopodial and neuropodial cirri as parapodial appendages, which, with the two urites, gives the appearance of there being six anal cirri.

Augener (1918) reported a new species, *L. greeffianus*, from the Isle of Rolas, by St. Thomas, without noting the form of the pharyngeal armature.

DISTRIBUTION. Originally recorded from Naples; Day (1934 and 1951) has collected this species from the coast of Natal. It may have been found in the Indo-Pacific region and reported under various names, but lack of details of the jaw structure makes confirmation of this impossible.

Family SYLLIDAE

Body small and narrow. Prostomium with four eyes, two palps and three antennae. Normally two pairs of tentacular cirri on the first segment, which never has chaetae. Protrusible proboscis, divided into two regions: (1) anterior, the pharynx, chitinous, cylindrical, with or without teeth; (2) posterior, the proventriculus, barrel-shaped. Parapodia uniramous, normally with dorsal and ventral cirri. Chaetae rarely simple, normally compound with a heterogomph articulation.

KEY TO SUBFAMILIES

- | | | | | | | | | | | |
|---------------------------------------|---|---|---|---|---|---|---|---|---|---------------------------|
| 1. Without ventral cirri | . | . | . | . | . | . | . | . | . | AUTOLYTINAE. ¹ |
| With ventral cirri | . | . | . | . | . | . | . | . | . | 2. |
| 2. Palps not fused | . | . | . | . | . | . | . | . | . | SYLLINAE. |
| Palps fused | . | . | . | . | . | . | . | . | . | 3. |
| 3. Palps fused at the bases only | . | . | . | . | . | . | . | . | . | EUSYLLINAE. |
| Palps fused along their entire length | . | . | . | . | . | . | . | . | . | EXOGONINAE. |

¹ Not recorded from the Gold Coast.

Subfamily SYLLINAE

KEY TO GENERA

- | | | | | | | | | |
|---|---|---|---|---|---|---|---|----------------|
| 1. A large tooth with a trepan | . | . | . | . | . | . | . | TRYPANOSYLLIS. |
| A large tooth with no trepan | . | . | . | . | . | . | . | 2. |
| 2. With the tooth on the anterior part of the pharynx | . | . | . | . | . | . | . | SYLLIS. |
| With the tooth on the posterior part of the pharynx | . | . | . | . | . | . | . | OPISTHOSYLLIS. |

Genus *TRYPANOSYLLIS* Claparède, 1864

The proboscis is crowned with a circle of chitinous teeth (the trepan), and there is also a large single anterior tooth.

Trypanosyllis prampramensis Augener, 1918

Trypanosyllis prampramensis Augener, 1918, pp. 276-278, pl. 4, figs. 91-92, text-fig. 26; from Pram Pram.

Trypanosyllis prampramensis, Day, 1953, p. 414, from Still Bay and Kommetje, S. Africa.

This species is only known from these records, and has not been found in the present survey. *T. prampramensis* appears to be very close to the European *T. coeliaca*,

but is characterized by unidentate compound chaetae, the latter having bidentate chaetae. Augener's specimen was 6.5 mm. long by 0.7 mm. wide for 100 segments.

Genus *SYLLIS* Savigny, 1818

Prostomium with four eyes and often two anterior eye-spots. Pharynx crowned with soft papillae and with a prominent anterior tooth. Antennae and dorsal cirri are moniliform; ventral cirri are not articulated.

KEY TO SUBGENERA

1. All chaetae simple (*Haplosyllis*).¹
 With compound chaetae and, sometimes, simple chaetae 2.
2. Anterior chaetae compound, thereafter some large simple chaetae (*Syllis*).
 All chaetae compound 3.
3. Compound chaetae with short articles all alike or differing only slightly from each other (*Typosyllis*).
 Compound chaetae with long and short articles (*Ehlersia*).

¹ Not recorded from the Gold Coast.

Syllis (Syllis) gracilis Grube, 1840

Syllis gracilis, Fauvel, 1923, p. 259, fig. 96, f-i.

LOCALITY. Off Accra, dredge in 7.3 metres, 1 mile off shore, 2 miles west of Densu River (1), 8 mm. long.

The dorsal cirri have between 8 and 12 articles. In the middle of the body chaetae are simple (Text-fig. 5, a), but anteriorly and posteriorly there are compound falcigers. The specimens here examined are not as long as those recorded by Fauvel (1923); they may be immature.

DISTRIBUTION. Mediterranean Sea, Atlantic Ocean, Red Sea, Indian and Pacific Oceans.

Subgenus *TYPOSYLLIS* Langerhans, 1879

KEY TO SPECIES

1. Dorsal cirri long with more than 20 articles *T. variegata*.
2. Dorsal cirri short with less than 20 articles *T. hyalina*.

Syllis (Typosyllis) variegata Grube, 1860

Syllis (Typosyllis) variegata, Fauvel, 1923, p. 262, fig. 97, h-n.

LOCALITIES. Axim, (a) Shore, 13.iv.49 (1), 10 mm. long, incomplete; (b) Hospital Reef, 7.i.51 (1), 7 mm. long, complete.

In the specimen from Axim shore, the dorsal cirri are alternately long and short, with 30 to 40 and 20 to 25 articles respectively. The specimen from the Hospital Reef, however, has dorsal cirri all about the same size with 30 to 40 articles. In both specimens the pharynx is crowned with 10 to 11 soft papillae and has a prominent anterior tooth. In the specimen from the Hospital Reef compound chaetae

have strongly bidentate, short, terminal articles, but in the specimen from the shore the bidentation is less pronounced.

DISTRIBUTION. English Channel, Mediterranean Sea, Atlantic Ocean, Indian Ocean, Red Sea and Pacific Ocean.

Syllis (Typosyllis) hyalina Grube, 1863

Syllis (Typosyllis) hyalina, Augener, 1918, pp. 242-247, pl. 4, figs. 95, 96, from Pram Pram.

This species has not been collected in the present survey. It is distinguished from *T. variegata* in having unidentate terminal articles on the compound chaetae, and few articles on the dorsal cirri. *T. hyalina* frequently retains its colour after preservation, showing a uniform light red anteriorly, or transverse bands of a red-brown, but no specimens of *T. variegata* have been examined retaining any colouring matter.

DISTRIBUTION. English Channel, Mediterranean Sea and Atlantic Ocean.

Subgenus *Ehlersia* Langerhans, 1879

Syllis (Ehlersia) cornuta Rathke, 1843

Syllis (Ehlersia) sexoculata, Augener, 1918, pp. 269-271, from Pram Pram in 9 metres depth.

LOCALITIES. (1) Off Accra, dredge in 7.3 metres, 1 mile off shore, 2 miles west of Densu River, (1), 6 mm. long. (2) Axim shore, 13/14.iv.49, (2), 5 and 6 mm. long.

There are two pairs of small eyes posterior to the median antennae, and two minute eye-spots on the anterior border of the prostomium. Anterior dorsal cirri have 8 to 10 articles, median cirri 10 and posterior cirri 4 to 5. The two anal cirri have 12 articles. Compound chaetae are of two kinds, one with a long terminal article (Text-fig. 5, b) and the other short (Text-fig. 5, c).

These specimens are small and may be juveniles.

DISTRIBUTION. English Channel, Mediterranean Sea, Atlantic—Canaries, Senegal, Angola—Persian Gulf and Indian Ocean.

Genus *OPISTHOSYLLIS* Langerhans, 1879

An occipital flap on the posterior border of the prostomium.

Opisthosyllis brunnea Langerhans, 1879

Opisthosyllis brunnea, Augener, 1918, pp. 274-276, text-fig. 25.

LOCALITIES. (1) Tenpobo shore, 3/4.ii.50 (5), 3 complete, 8-10 mm. long. (2) Winneba shore, 22.xi.49 (1), complete, 13 mm. long. (3) Axim, Hospital Reef, 7.i.51 (1), incomplete, 6 mm. long.

There are between 30 to 50 articles in the dorsal cirri. The pharynx extends over eleven segments, bears a crown of 9 to 11 papillae and carries a large conical tooth

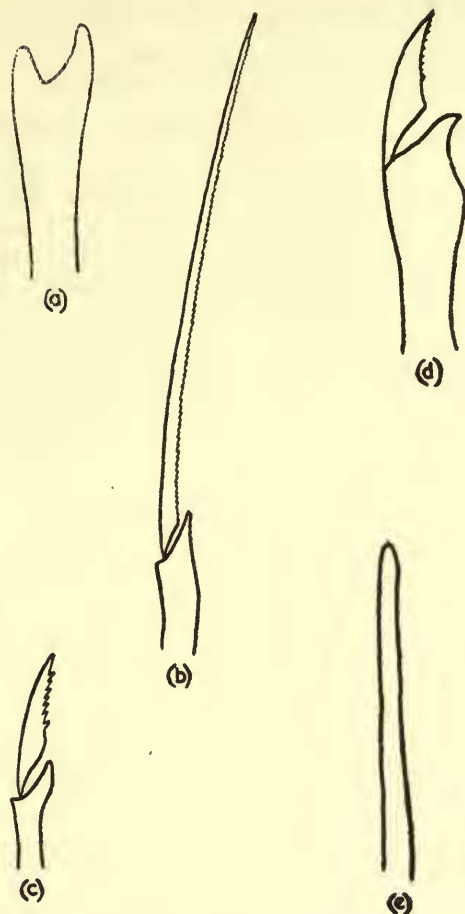


FIG. 5. Syllidae chaetae. (a) *Syllis gracilis*, simple chaeta, $\times 300$. (b) *Ehlersia cornuta*, compound spiniger, $\times 400$. (c) *Ehlersia cornuta*, compound falciger, $\times 400$. (d) *Opisthosyllis brunnea*, compound falciger, $\times 250$. (e) *Opisthosyllis brunnea*, simple chaetae, $\times 300$.

posteriorly. The tooth is without colour and stands out against the dark brown of the pharynx. Compound chaetae have short unidentate articles (Text-fig. 5, d). In posterior parapodia there are long simple chaetae (Text-fig. 5, e).

DISTRIBUTION. The tropical coast of W. Africa and the Indian Ocean.

Subfamily EUSYLLINAE

Genus *PIONOSYLLIS* Malmgren, 1867

Pharynx with a single anterior tooth.

Pionosyllis ehlersiaeformis Augener, 1913

Pionosyllis ehlersiaeformis, Augener, 1918, pp. 281-283.

Pionosyllis ehlersiaeformis, Day, 1953, pp. 415-416, text-fig. 3, d.

LOCALITY. Off Accra, Buchanan Survey, in 14.5 metres off the Castle (1), incomplete, 15 mm. long.

The pharynx is crowned with eight large papillae. Antennae and dorsal cirri are very long with numerous articulations, which is unusual in this genus where, normally, the appendages are smooth. Ventral cirri are smooth and pointed. Superior chaetae have slender, curved unidentate terminal articles, about ten times as long as the articles on the inferior chaetae which are straight with bidentate tips.

No eyes have been seen in this specimen, otherwise it is typical of the species.

DISTRIBUTION. Augener originally recorded this species from S.W. Australia, but in 1918 he reported it from German S.W. Africa, and in 1953 Day collected it from Cape Agulhas.

Subfamily EXOGONINAE

Genus *EXOGONE* Oersted, 1845

Palps well developed, completely fused; three antennae; one pair of tentacular cirri. Pharynx with a single tooth. Dorsal and ventral cirri small. Chaetae simple and compound.

Exogone gemmifera (Pagenstecher)

Exogone gemmifera, Augener, 1918, pp. 299-301, text-fig. 29, from Pram Pram in 9 metres depth.

This species has not been collected in the present survey. Median antenna longer than the prostomium and longer than the paired laterals; two pairs of large eyes. Dorsal cirri missing on the second chaetiger; ventral cirri small, often difficult to see. Pharynx straight, crowned with papillae, with a single anterior tooth. In each parapodium there is a simple, bluntly terminated chaeta and a compound form with a very small bidentate article; on posterior feet there is a simple ventral chaeta. *E. gemmifera* normally measures between 2-4 mm. in length.

DISTRIBUTION. English Channel, Mediterranean Sea, and Atlantic Ocean.

Family NEREIDAE

Prostomium with four eyes, two antennae, two massive palps and four pairs of tentacular cirri. Proboscis armed with two horny jaws and normally a series of horny teeth (paragnaths). Parapodia normally biramous after the 2nd foot; chaetae compound; most species have a Heteronereis, sexually mature form.

Generic and specific distinctions in this family are based primarily on the form and arrangement of the paragnaths. These are divided first into two rings, the maxillary and oral (Text-fig. 6), and then into eight numbered areas, of which I to IV

are maxillary and V to VIII oral; odd numbers are median and single, even numbers lateral and paired. The jaws are at the distal end of the proboscis. The different types of chaetae referred to in the text are illustrated in Text-figs. 8 and 12.

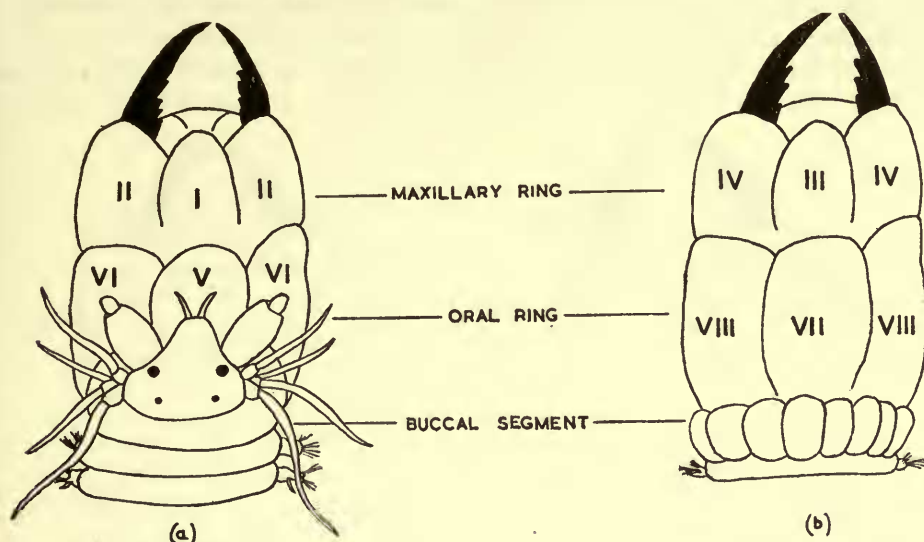


FIG. 6. Diagrammatic representation of the division of the proboscis in Nereidae.

KEY TO GENERA

1. Horny paragnaths of one type only, conical *Nereis*.
- Horny paragnaths of more than one type 2.
2. Horny paragnaths of two types, conical teeth and transverse cutting plates . . . *Perinereis*.
- Horny paragnaths of three types, conical, transverse and pectinate . . . *Pseudonereis*.

Genus *NEREIS* Linnaeus, 1758

All groups of paragnaths complete—*Neanthes*, sub-genus.

One or more groups of paragnaths missing—*Nereis*, *sensu strictu*.

Nereis falsa Quatrefages, 1865

Nereis callaona, Augener, 1918, pp. 184–186.

Nereis falsa, Fauvel, 1923, pp. 337–338, fig. 129, *c-m*.

Nereis falsa, Day, 1951, pp. 27–28.

LOCALITIES. (1) Tenpobo shore (3), anterior pieces only, 11–15 mm. long. (2) (a) Accra, Christiansborg shore, 17.iii.49 (20 +), many complete, between 30–60 mm. long; (b) Accra, on sponge near Sound, 9.xii.50 (1), anterior fragment 10 mm. long; (c) from wood netted off Chorkor, 14.v.51 (1), complete, 18 mm. long. (3) (a) Winneba shore (1), anterior fragment, 10 mm. long; (b) Winneba, neap tide, 15.xi.49 (3), 20–30 mm. long. (4) Axim, (a) Shore 13/14.iv.49 (4), 2 complete, 50 mm. long, others anterior fragments, 10–15 mm. long; (b) Hospital Reef, 7.i.51

(g), some complete, 10–15 mm. long; (c) Lighthouse Reef, 8.i.51 (2), complete 10 and 20 mm. long.

This is one of the commonest littoral forms of the area. The arrangement of the paragnaths varies very little from that shown in Text-fig. 7, though paired groups VI sometimes have three or five teeth instead of two sets of four; area V never has any paragnaths. Notopodial chaetae are homogomph spinigers throughout, except

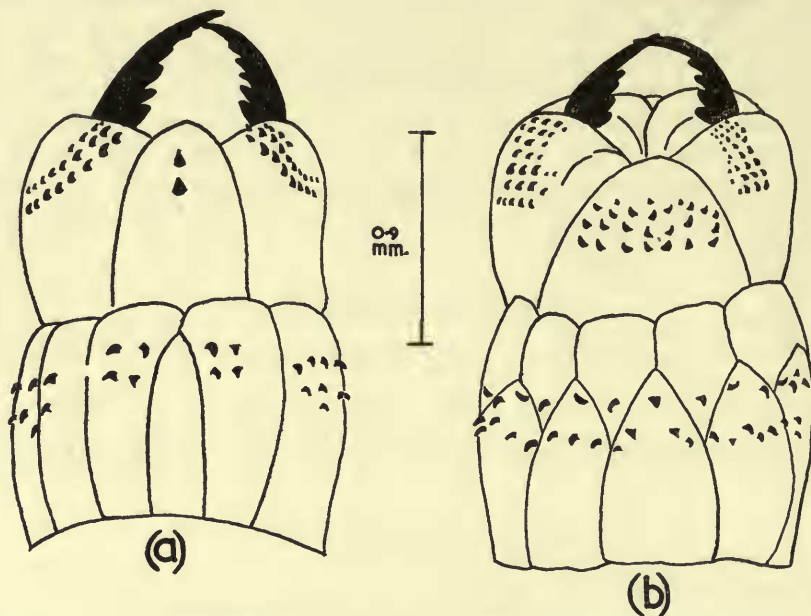


FIG. 7. *Nereis falsa*. Arrangement of the paragnaths on the proboscis, (a) dorsal; (b) ventral. (Specimen from Tenpobo.)

that in some of the posterior feet a single homogomph falciger may be present (Text-fig. 8, a). Neuropodia have homogomph spinigers and heterogomph falcigers dorsally and heterogomph spinigers (Text-fig. 8, b) and falcigers ventrally.

DISTRIBUTION.—Atlantic, Mediterranean, Adriatic and around the South African coast from Cape Town to Natal.

Nereis (Neanthes) succinea (Frey & Leuckart), 1847

Nereis glandulosa, Augener, 1918, pp. 192–194.

Nereis succinea Fauvel, 1936, pp. 307–313, (*nec Nereis succinea* Fauvel, 1923, pp. 346–347.)

LOCALITIES. Off Accra: (a) From wood netted of Chorkor, in 14 metres, 14.v.51 (3), complete, 11–25 mm. long; (b) Stn. 29 (1), complete, 25 mm. long; (c) 12 metres off Accra (1), 38 mm. almost complete; (d) Buchanan Survey, in a depth of 3.6 to 11.0 metres (10), between 25–60 mm. long, one a heteronereis.

The pattern of paragnaths varies considerably in this species around a typical

form shown in Text-fig. 9. Thus I = 1-4 in a longitudinal line ; II = arcs in two rather scattered rows ; III = a transverse group in 2-3 scattered rows ; IV = arced masses ; V = 0-4 (rarely 5-7). The absence of teeth on V in four of the specimens from the Buchanan Survey does not necessarily upset the validity of the above key, since this may be due to immaturity, accidental loss, general wear and tear, or it may indicate the approach of sexual maturity. This latter reason is of doubtful significance, but is referred to because this group is missing in the heteronereis

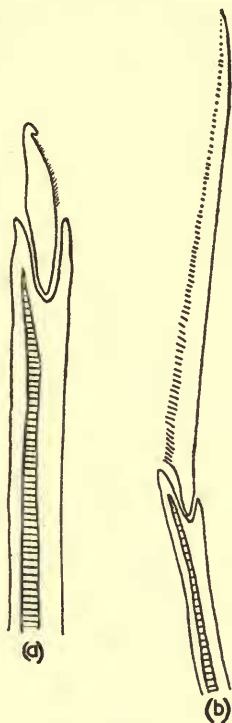


FIG. 8. *Nereis falsa*. (a) Homogomph falciger from a posterior notopodium, (b) heterogomph spiniger from a neuropodium. Both $\times 250$. (Specimen from Axim.)

example. Area VI is typically described as having a circle of six to seven paragnaths surrounding a central one, but the majority of specimens here examined conform to the pattern shown in Text-fig. 9, in which between 9-13 teeth are arranged in three scattered rows. A specimen in the B.M. (N.H.), Reg. No. 1928.4.26.290, from French Guinea, identified by Professor Fauvel, has 9-10 teeth in three scattered rows, and this variation may be common among W. African examples of *N. succinea*. Teeth in areas VII and VIII are both small and large and arranged, approximately, in two rows.

A parapodium from the posterior region of one specimen is shown in Text-fig. 10. The enlargement of the dorsal lobe only takes place posteriorly, anteriorly it is long and thin. Notopodial chaetae are homogomph spinigers, neuropodial chaetae

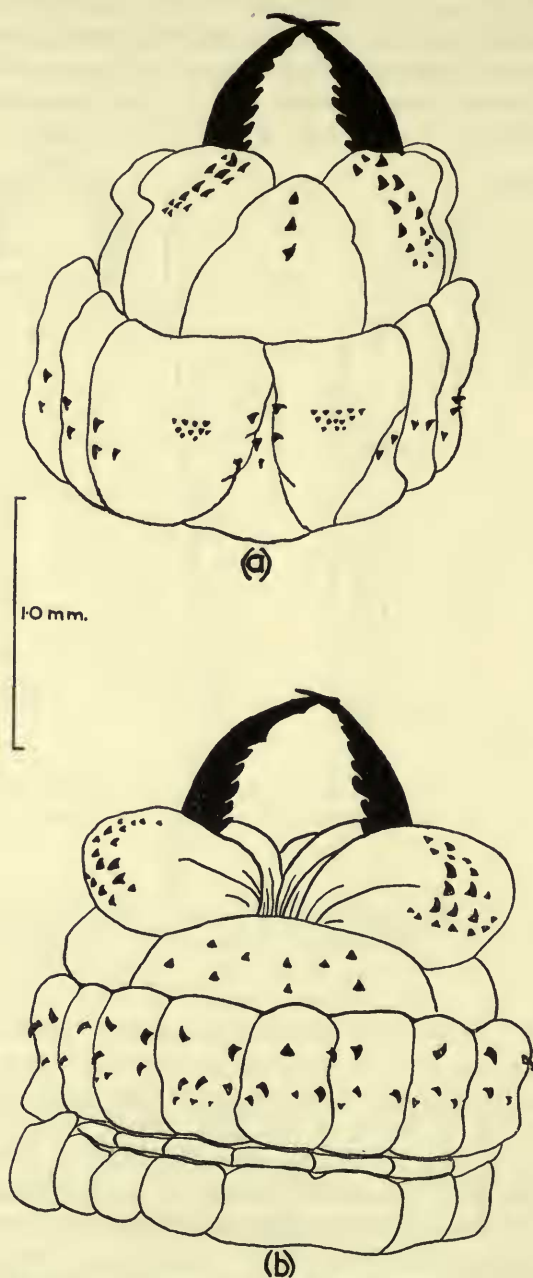


FIG. 9. *Nereis succinea*. Arrangement of the paragnaths on the proboscis, (a) dorsal, (b) ventral. (Specimen from the Buchanan Survey.)

homogomph spinigers, and heterogomph spinigers and falcigers. The absence of notopodial homogomph falcigers is considered by many workers (Fauvel, 1936; Hartman, 1951) to be important diagnostically. It is doubtful if a negative character of this type can be so considered, since accidental loss of chaetae frequently occurs.

DISTRIBUTION. Cosmopolitan; frequently found in waters of low salinity.

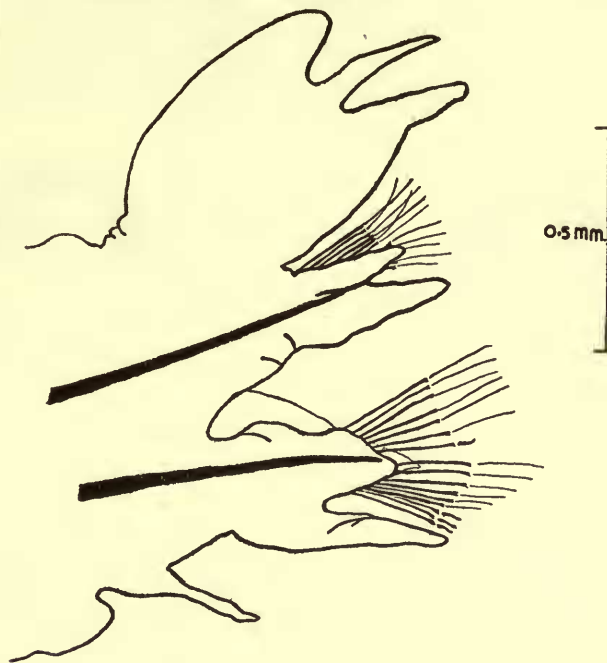


FIG. 10. *Nereis succinea*. Posterior view of parapodium from the 32nd chaetiger. (Specimen from the Buchanan Survey.)

Genus *PERINEREIS* Kinberg, 1865

With transverse chitinous plates (horny paragnaths) on area VI; other areas with conical paragnaths.

Perinereis melanocephala McIntosh, 1885

Nereis (Perinereis) melanocephala, McIntosh, 1885, pp. 216-219, pl. 34 figs. 14-17; pl. 16A, figs. 8, 9; from Bermuda, between tide marks.

Nereis (Perinereis) melanocephala, Augener, 1918, pp. 209-212, from the Island of Annobon and the Cameroons.

LOCALITIES. (1) Tenpobo shore (8), 6 complete, 20-30 mm. long, others ant. fragments: collected February, 1950. (2) Accra, Christiansborg shore (1), ant. piece 38 mm. long. (3) Winneba shore, 15.xi.49, Neap tides (2), anterior pieces, 17-20 mm. long—one a developing heteroneis stage. (4) Sekondi, high level plateau, 21.ii.49 (3) complete, 20-25 mm. long. (5) Dixcove shore (1), complete, 64 mm. long. (6) Axim, 13/14.iv.49 (1), complete, 18 mm. long.

The proboscis of this species is shown in Text-fig. 11. Little variation from the normal has been found; I = a triangular area of teeth; II = rhomboidal area of similar size to I; III = rectangular area also equal to I; IV similar to II; V = a single large tooth; VI = single long, transverse, horny bands; VII and VIII = 2 rows of teeth with scattered isolated teeth here and there. This compares accurately with McIntosh's original description. Unfortunately the type specimen, B.M. (N.H.). Reg. No. 1885.12.1.159 has no head. Efforts to find this portion, including enquiries at the University of St. Andrews, where McIntosh did his work, have been unsuccessful. Notopodial chaetae are all homogomph spinigers (Text-fig.

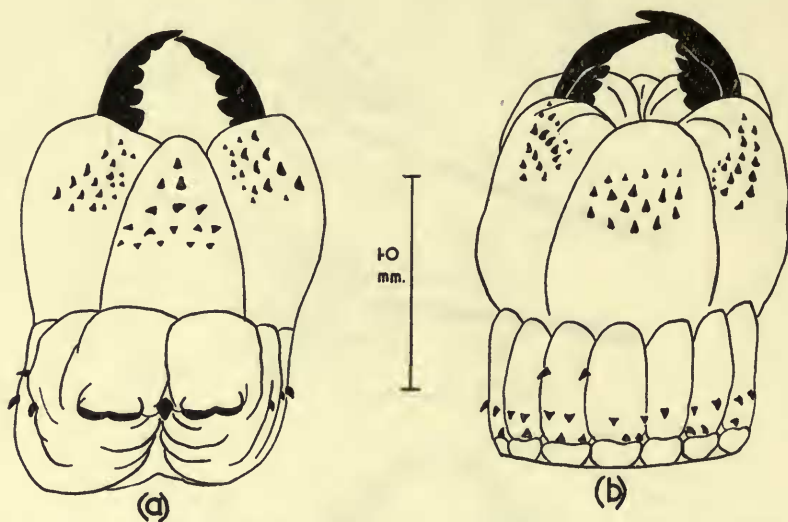


FIG. 11. *Perinereis melanocephala*. Arrangement of the paragnaths on the proboscis, (a) dorsal, (b) ventral. (Specimen from Sekondi.)

12, b), as are the superior neuropodial group. Inferior neuropodial chaetae are heterogomph falcigers (Text-fig. 12, a). The superior notopodial lobe becomes enlarged in the region of the 37th foot, continuing thus to the end of the body, the dorsal cirrus being attached (Text-fig. 13, a) to its indented extremity. The degree of this enlargement may be noted with respect to an anterior foot illustrated in Text-fig. 13, b.

One of the specimens from Winneba has modified parapodia, beginning at the 17th segment, indicating the development of the heteronereis stage (Text-fig. 14). The lobe at the base of the dorsal cirrus, the post-chaetal neuropodial lobe and the ventral cirrus are all in the early stages of development into foliaceous swimming surfaces. The chaetae, however, remain normal, not having developed into the natatory type expected in this genus, otherwise the aspect of the parapodia is similar to that assumed by the more common *P. cultrifera* in the heteronereis condition.

DISTRIBUTION. *P. melanocephala* is only known from the above records.

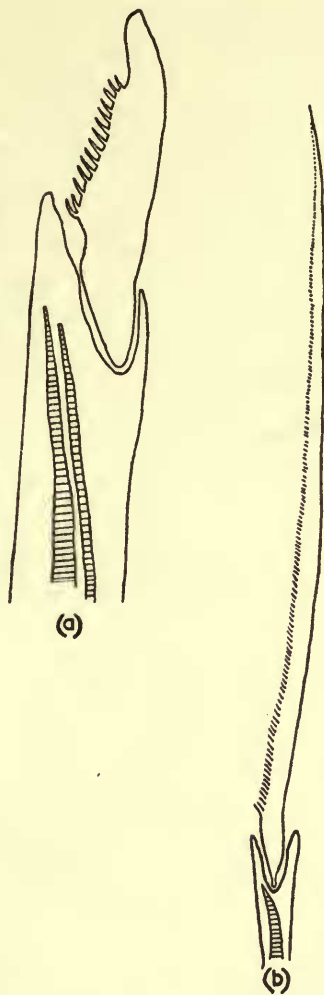


FIG. 12. *Perinereis melanocephala*. (a) Neuropodial heterogomph falciger, $\times 500$; (b) notopodial homogomph spiniger, $\times 250$. (Specimen from Sekondi.)

Genus *PSEUDONEREIS* Kinberg, 1865

With transverse chitinous plates (horny paragnaths) on area VI; transverse rows of pectinate teeth and conical paragnaths on other areas.

Pseudonereis gallapagensis Kinberg, 1865

Pseudonereis gallapagensis, Gravier, 1909, pp. 629-633, figs.

Pseudonereis variegata, Fauvel, 1927b, pp. 527-528, (part).

Pseudonereis gallapagensis, Hartman, 1948, pp. 68-69.

LOCALITIES. (1) (a) Winneba shore, 3.iii.50 (1), complete, 9 mm. long, 4.iii.50 (2), one complete, 15 mm.; (b) Winneba rock face, 22.xi.49 (6), several complete,

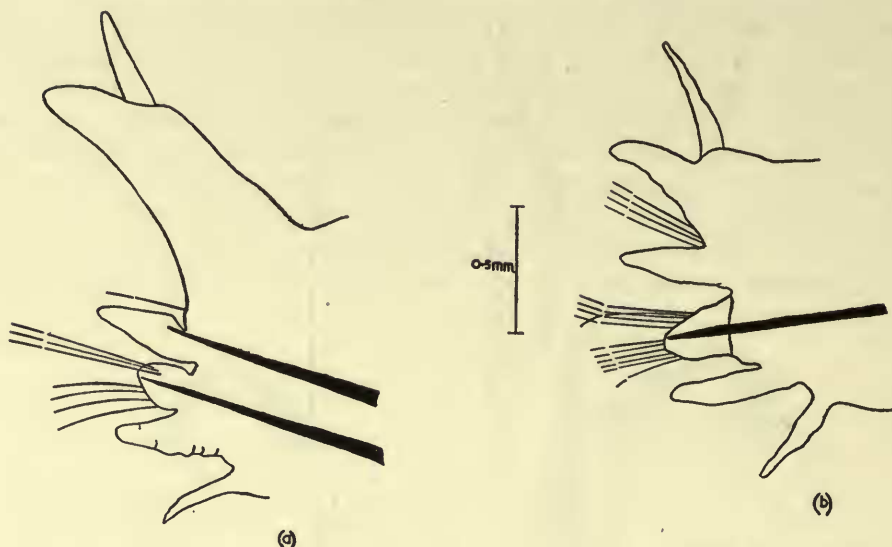


FIG. 13. *Perinereis melanocephala*. Parapodia of (a) 37th chaetiger (specimen from Sekondi); (b) an anterior chaetiger (specimen from Tenpobo).

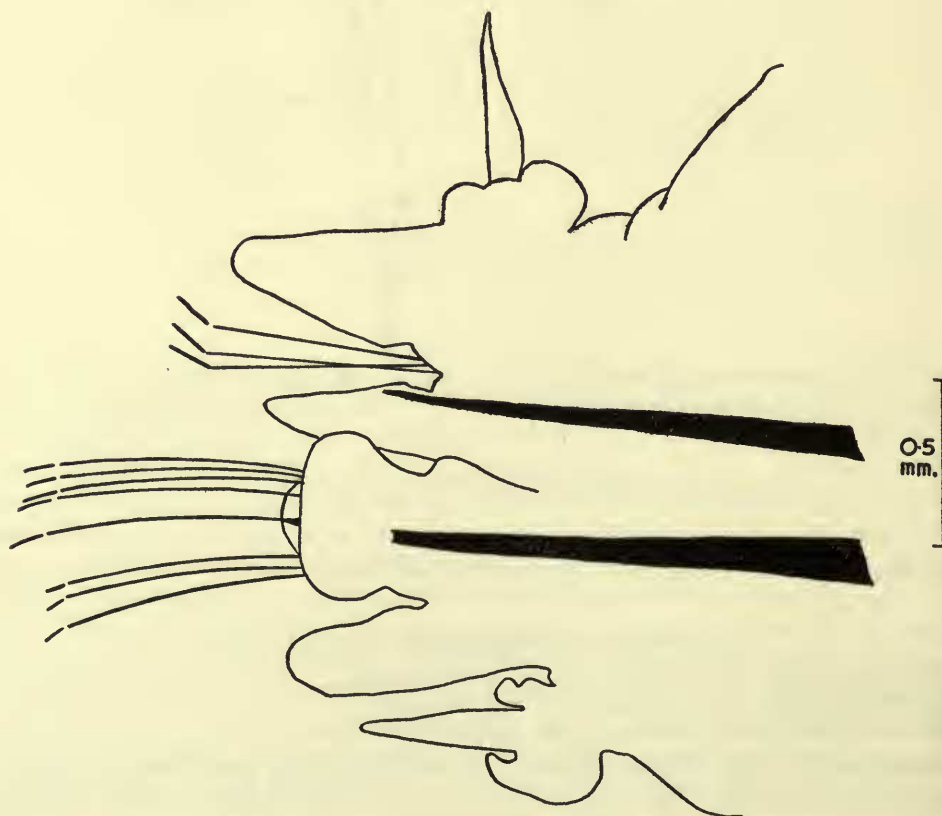


FIG. 14. *Perinereis melanocephala*. Parapodium from the 23rd chaetiger of a developing heteronereid. (Specimen from Winneba.)

between 15–30 mm. long; (2) (a) Axim shore, 13/14.iv.49 (1) complete, 19 mm. long; (b) Axim, hospital reef (2), both complete, one approaching sexual maturity, 17 mm. long, the other 11 mm. long.

Notopodial chaetae are homogomph spinigers; superior neuropodial chaetae also homogomph spinigers, whilst the inferior group are heterogomph falcigers. Posteriorly the dorsal lobe becomes foliaceous and carries at its distal end the dorsal cirrus, leaving little or no free margin. Hartman (1948) referred to this character as the specific distinction between *P. gallapagensis* and *P. variegata* (Grube), noting that the latter species had a free portion at the tip of the dorsal foliaceous lobe. Day (1951) disputed the value of this distinction and it is doubtful if it is of practical use. It is here suggested that *P. gallapagensis* has on each area IV of the proboscis an apical group of about 16 small conical teeth in addition to the rows of pectinae (Text-fig. 15, c), and this is a diagnostic character separating it from *P. variegata*. Kinberg (1865) did not note this character, though his figures were not drawn in a position which would show it. In examining the type specimen, which was in poor condition, Hartman (1948) did not refer to the proboscidean structures. Gravier (1909), however, observed this apical group on IV in specimens collected from Peru.

In groups VII and VIII in *P. gallapagensis* there is one row of alternating long and short teeth (Text-fig. 15, b), the anterior tip of the long teeth being in line with the

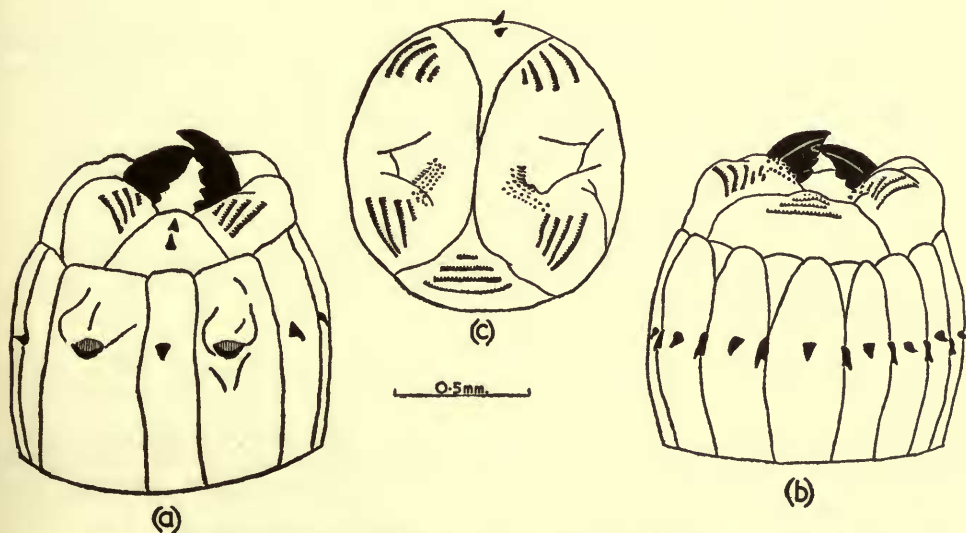


FIG. 15. *Pseudonereis gallapagensis*. Arrangement of the paragnaths on the proboscis, (a) dorsal, (b) ventral, (c) apical (jaws left out). (Specimen from Axim.)

latter. This is the condition on an extruded proboscis. If not extruded, however, due to the different lengths of alternate teeth, and the general contracted condition of the proboscis, it appears as if two rows of teeth are present. This character is clearly shown in Kinberg's (1910) type figure and contrasts with the condition in *P. variegata* in which there are $2/3$ rows of short teeth (McIntosh, 1903). All speci-

mens here listed agree with this description, as does one from the Cameroons in the B.M. (N.H.), Reg. No. 1928.4.2.844, which was recorded by Fauvel, 1927*b*, as *P. variegata*. Further specimens of *P. gallapagensis* in the B.M. (N.H.) collections come from Ceylon and from Mormugas Bay, Goa, near Bombay.

DISTRIBUTION. This is the first record of this species from the W. African coast ; apart from the above records, *P. gallapagensis* is known widely from the western coast of S. America, the Galapagos Islands and Hawaii.

Family NEPHTHYDIDAE

Body with numerous short segments. Prostomium small and flat carrying two pairs of antennae. Proboscis terminated with 14 to 22 soft bifid papillae and bearing 14 to 22 longitudinal rows of similar processes externally and two horny jaw pieces on its inner wall. Parapodia are biramous except for the first pair which may not be fully developed ; rami are wide apart with a coiled cirrus, probably branchiate in function, between them.

Only three genera are recognized in this family and the following key has been adapted from Hartman (1950) in which work an acceptable division of the type genus *Nephtys* was suggested :

- | | | | | | | | | | |
|----|--|---|---|---|---|---|---|---|------------------------|
| 1. | Inter-ramal cirri (branchiae) recurved—evolute | . | . | . | . | . | . | . | <i>Nephtys</i> . |
| 2. | " " " involute | . | . | . | . | . | . | . | <i>Aglaophamus</i> . |
| 3. | " " " absent | . | . | . | . | . | . | . | <i>Micronephthys</i> . |

No examples of the genus *Micronephthys* Freidrich, 1939, have been collected from the Gold Coast, but Augener (1918) recorded *M. ambriezettana* from Angola.

Genus *NEPHTHYS* Cuvier, 1817

Nephtys hombergii Audouin & Milne-Edwards, 1830

Nephtys hombergii, Fauvel, 1923, p. 367, fig. 143, *a-d*.

LOCALITIES. Off Accra : Stn. 71 (1) 12 mm. long, anterior piece ; Stn. 132 (1) 16 mm. long, anterior piece ; Buchanan Survey, in 3.5 to 11 metres (2), one complete, 54 mm. long.

This well-known species is characterized by 22 longitudinal rows of papillae on the proboscis, the appearance of the branchiae on the 4th chaetiger and the presence of a notopodial button ventral to the acicula and tending to overgrow it.

DISTRIBUTION. North Sea, English Channel, Mediterranean, Atlantic.

Genus *AGLAOPHAMUS* Kinberg, 1865

Aglaophamus lyrochaetus (Fauvel), 1902

Nephtys lyrochaeta Fauvel, 1902, pp. 72–5, figs. 9–12, from the estuary of the R. Casamance, Senegal.

Nephtys lyrochaeta, Augener, 1918, pp. 160–166, pl. 2, fig. 12 ; pl. 3, fig. 59, from Saltpond, Gold Coast in 9 metres, and Accra ; also several other W. African stations.

LOCALITIES. Off Accra : Stn. 32 (1), anterior piece, 10 mm. long ; Stn. 59 (1), anterior piece, 7 mm. long ; Stn. 70 (2), both anterior pieces, 7 and 8 mm. long ; Buchanan Survey, in 3.5-11 metres depth (4), two complete, 26 and 28 mm. long.

There are 14 longitudinal rows of papillae on the proboscis in this species. The " lyre " bristles occur in the centre of each group of chaetae and are about half the length of the others. They are therefore difficult to see unless the parapodium chosen for observation is carefully mounted. A later diagnosis by Fauvel (1927*b*) of *A. lyrochaetus* indicated the presence of a small lobe on the dorsum of the neuropodium which was confirmed by Monro (1930). With the " lyre " bristles, this character serves as specifically diagnostic. The anterior feet are biramous and not uniramous as indicated by Augener (1918), and the long ventral and dorsal cirri of the first and second chaetigers respectively, noted by Monro (1930), are not present in the specimens here described.

DISTRIBUTION.—*A. lyrochaetus* is only known through the above records.

Family GLYCERIDAE

Body elongate, tapering to both extremities, segments bi- or triannulate. Prostomium conical, annulated, with four small terminal antennae. Protrusible proboscis, very long, covered with papillae and armed with horny jaws of various kinds. Normally with biramous parapodia, but frequently uniramous anteriorly. Branchiae, when present, compound or simple, often retractile. Chaetae simple or compound.

KEY TO SUBFAMILIES

1. Body divided into 2 or 3 regions by variation in the form of the parapodia which may be uniramous, sub-biramous or biramous. Jaws and paragnaths numerous
GONIADINAE.
2. Body not divided into distinct regions, parapodia either uniramous or biramous throughout. Jaws and paragnaths few in number GLYCERINAE.

Subfamily GLYCERINAE

KEY TO GENERA

1. Parapodia uniramous throughout, with compound chaetae only *Hemipodus*.¹
2. Parapodia biramous throughout, with simple chaetae in notopodia and compound chaetae in neuropodia *Glycera*.

¹ Not recorded from the Gold Coast.

Genus *GLYCERA* Savigny, 1818

Prostomium long, with more than three annulations. Proboscis with four large horny paragnaths distally and covered with papillae. Parapodia with a stumpy dorsal cirrus, two anterior lobes one or two posterior lobes and a ventral cirrus. Neuropodial chaetae compound spinigers, notopodial chaetae simple capillaries. Branchiae present or absent, simple or branched, permanent or retractile into the foot.

Glycera convoluta Keferstein, 1862

Glycera africana, Arwidsson, 1898, pp. 21-22, pl. 1, figs. 10-12.

Glycera africana, Augener, 1918, pp. 384-386.

Glycera tridactyla, Augener, 1918, pp. 386-389, pl. 5, figs. 142-143, text-fig. 47.

Glycera convoluta, Fauvel, 1923, pp. 383-385, fig. 150, *a-h*.

LOCALITIES. (1) Off Accra: Stn. 65 (1); Stn. 69 (1); Stn. 89 (1); Stn. 126 (1); all incomplete except Stn. 65, which measures 55 mm. long; Buchanan Survey in 3.6 to 11.0 metres depth (6), five complete, 40-52 mm. in length. (2) Apam shore, 3/4.iv.50 (3), one complete, 46 mm. long.

The papillae of this species are illustrated in Text-fig. 16, *a* and *b*. They are cylindrical with a truncated termination, the truncation bearing a plate similar in

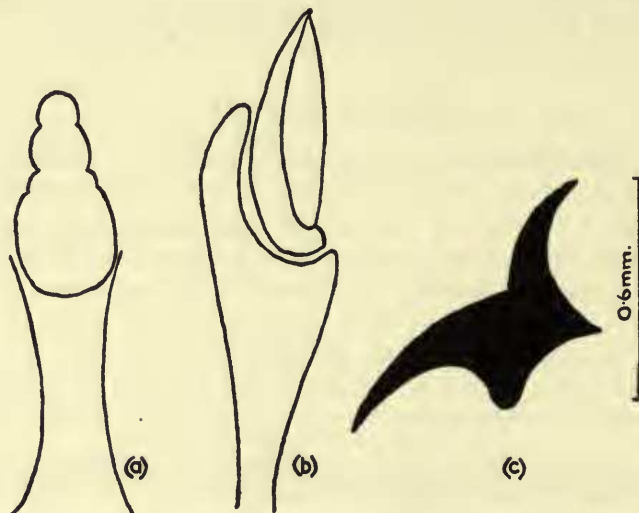


FIG. 16. *Glycera convoluta*. (a) Papilla from the proboscis, *en face* view, $\times 1500$ (specimen from Apam); (b) papilla from the proboscis, side view, $\times 1500$ (specimen from Stn. 89); (c) silhouette of one of the 4 jaw articles, drawn *in situ*, (specimen from Stn. 126).

appearance to the nail on the human finger. Over the greater part of the body both anterior parapodial lobes are bluntly pointed and each project the same distance from the body; posterior lobes are unequal, the dorsal being blunt to oval and projecting a short distance, whilst the ventral lobe is blunt and hardly projects at all. Branchiae are non-retractile and lie on the dorsal edge of the parapodia. In the anterior region they project as far as the chaetae, but posteriorly become very much longer. Normally the branchiae appear at the 14th-18th parapodia, but they may not appear until the 29th foot. They are absent from extreme posterior segments.

A silhouette of one of the paragnaths is shown in Text-fig. 16, *c*, it was drawn *in situ*, at the end of the protruded proboscis.

DISTRIBUTION. Mediterranean Sea and Atlantic Ocean.

Subfamily GONIADINAE

KEY TO GENERA

- | | |
|---|-----------------------|
| 1. Proboscis with chevrons | <i>Goniada</i> . |
| Proboscis without chevrons | 2. |
| 2. Neuropodia with spinigerous chaetae only | <i>Ophioglycera</i> . |
| Neuropodia with spinigerous and falcigerous chaetae | <i>Goniadopsis</i> . |

Genus **GONIADA** Audouin & Milne-Edwards, 1833

Body divided normally into two regions, an anterior uniramous and a posterior biramous portion ; there may be a transitional region with sub-biramous parapodia. Paragnaths include a pair of large dentate macrognaths separated from each other by dorsal and ventral arcs of micrognaths. The proboscis carries two rows of dark hard V shaped pieces, chevrons, and numerous papillae of one or few kinds, distributed in longitudinal, or irregular bands.

Goniada multidentata Arwidsson, 1899

Goniada multidentata Arwidsson, 1898, pp. 45-47, figs. 40-42.

LOCALITY. Off Accra, Buchanan Survey in 39.6 metres depth, off Lagoon (1), complete, about 90 mm. long.

There are 36 anterior uniramous, 15 median sub-biramous, and 131 posterior biramous, parapodia. The uniramous feet bear prominent thick ventral cirri and slender pointed dorsal cirri. There are three ligules to each chaetigerous lobe, two anterior, long and finger-shaped, and one posterior, short. The sub-biramous portion is so qualified only because the notopodial lobes are not well developed and also because the segments in this region are the same width as those in the anterior uniramous region. Notopodial chaetae, however, are developed and the segments are strictly biramous. In the biramous posterior portion the segments are much wider than anteriorly. Neuropodial ligules are as in the anterior region except that the posterior ligule is triangular ; there are two notopodial ligules, both blunt, one dorsal and the other ventral to the chaetae. Notopodial chaetae are acicular. Neuropodial chaetae and chaetae in the anterior uniramous part are long heterogomph spinigers (Text-fig. 17, *a*).

The large macrognaths each carry 12 teeth, six large and six small. There are 30 dorsal and 12 ventral micrognaths. Papillae from the proboscis are illustrated in Text-fig. 17, *b*. About 150 pairs of chevrons have been counted, extending in two rows along almost the full length of the proboscis. Arwidsson reported 90 pairs in his original description, but it is not considered that the extra number present in the Accra specimen is sufficient to warrant specific distinction. In all other characters the specimens appear to be identical, and since the Accra specimen is almost twice as long as Arwidsson's the variation may be taken to indicate differences in growth stages.

DISTRIBUTION. This species is known only from the tropical coast of West Africa.

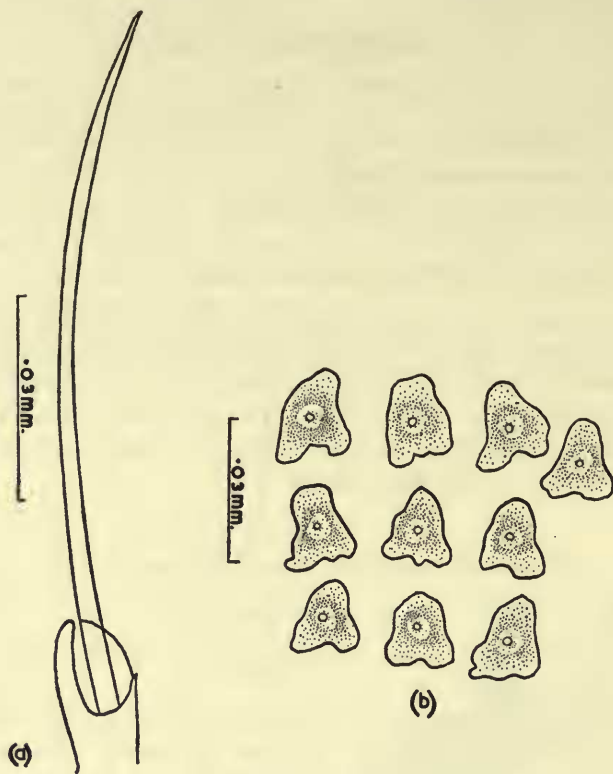


FIG. 17. *Goniada multidentata*. (a) Chaeta from the anterior uniramous region ; (b) group of papillae from the proboscis.

Genus *GONIADOPSIS* Fauvel, 1928

Body divided into three distinct regions ; (1) anterior, with uniramous parapodia and stout falcigerous chaetae ; (2) median, with uniramous parapodia and spinigerous chaetae ; (3) posterior, with biramous parapodia, notopodial acicular chaetae and long spinigerous neuropodial chaeta. Papillae on the proboscis are numerous, of one or few kinds.

Goniadopsis incerta Fauvel, 1932

Goniada (*Goniadopsis*) *incerta* Fauvel, 1932, pp. 122-123, pl. 4, figs. 1-10, from Akyab, Burma. *Goniadopsis incerta*, Day, 1953, p. 430, from the estuary of the Zwartkops River, Cape Province, South Africa.

LOCALITY. (1) Apam shore, 4.iv.50 (1), 35 mm. long.

The anterior region consists of 33 segments. Parapodia have three ligules, two anterior, finger shaped, of equal length, one posterior, broad and triangular. One of the stout falcigerous chaetae is shown in Text-fig. 18, *a*. Ventral cirri are short and blunt anteriorly, but elongate in the posterior segments of this region.

The median region consists of 37 segments. Parapodial ligules are similar to those in the anterior region. One of the compound spinigers is shown in Text-fig. 18, *b*. Ventral cirri are very long, dorsal cirri are short.

The posterior biramous portion makes up the remainder of the body of 111 segments. There are two notopodial ligules, one posterior; neuropodial ligules are

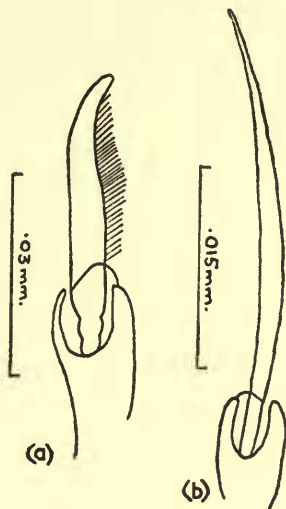


FIG. 18. *Goniadopsis incerta*. (a) Falciger from the anterior region; (b) spiniger from the median region.

similar to those in the anterior region except that the posterior one is drawn out to a blunt point. Compound spinigers are as in the median region.

There is one pair of small eye-spots at the base of the annulated prostomium.

DISTRIBUTION. This is the first record of this genus from the Atlantic Ocean.

Genus *OPHIOGLYCERA* Verrill, 1885

Body divided into three regions; (1) anterior with uniramous parapodia, with spinigerous chaetae; (2) median, in which notopodia with simple chaetae are gradually developed; (3) posterior, with biramous parapodia. Proboscis long, terminated with a circlet of soft fleshy papillae, within which is a circlet of macrog-naths. Papillae on the proboscis are numerous of one or few kinds.

Ophioglycera archeri sp. n.

Holotype, B.M. (N.H.), Reg. No. 1953.3.1. 648.

LOCALITY. Off Accra, Buchanan Survey, in 7.3 metres off Castle (1), complete, 134 mm. long. The proboscis, which is not protruded, measures about 25 mm. long.

The prostomium is without visible annulations or eye-spots. Eighteen large papillae form a crown at the end of the proboscis. The proboscideal teeth form a

circlet, adjacent to the papillae, of two large separate macrognaths having between them groups of 18 and 25 micrognaths. The macrognaths have four teeth each, two large and two small, the micrognaths are bidentate. Papillae cover the surface of the proboscis and appear to be all alike (Text-fig. 20, *b*).

On the first foot there is a single cirrus with no chaetae. Thereafter there are 27 uniramous parapodia with spinigerous chaetae (Text-fig. 19, *a*), 49 segments in which notopodia are developed, but in which the rami are close together (Text-fig. 19, *b*) and 140 biramous parapodia in which the rami are far apart (Text-fig. 20, *a*). Neuropodial chaetae are compound spinigers throughout, notopodial chaetae are simple.

In this specimen biramous parapodia are not gradually developed. At the 28th chaetiger the notopodial ramis appear fully developed with lobes and simple chaetae. A third division of the body, however, is recognizable at the 77th chaetiger where notopodia and neuropodia are much wider apart than they are anteriorly, and the chaetigerous ligules are much more foliaceous (compare Text-fig. 19, *a* and 19, *b* with Text-fig. 20, *a*).

No diagnostic coloration is apparent in the preserved condition of the worm.

No other species of *Ophioglycera* is known in which the change in form of the parapodia begins as far forward as in *O. archeri*. In *O. foliocea* the change begins at about the 35th chaetiger, but in *O. longicirrata*, *O. gigantea*, *O. eximia* and *O. distorta* it does not appear until the 55th or 59th, and, exceptionally, may be delayed to the 90th.



FIG. 19. *Ophioglycera archeri*, sp. n. Parapodia, (a) 13th foot, (b) 28th foot.

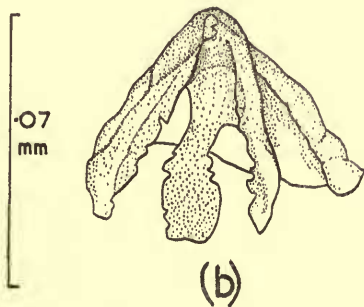
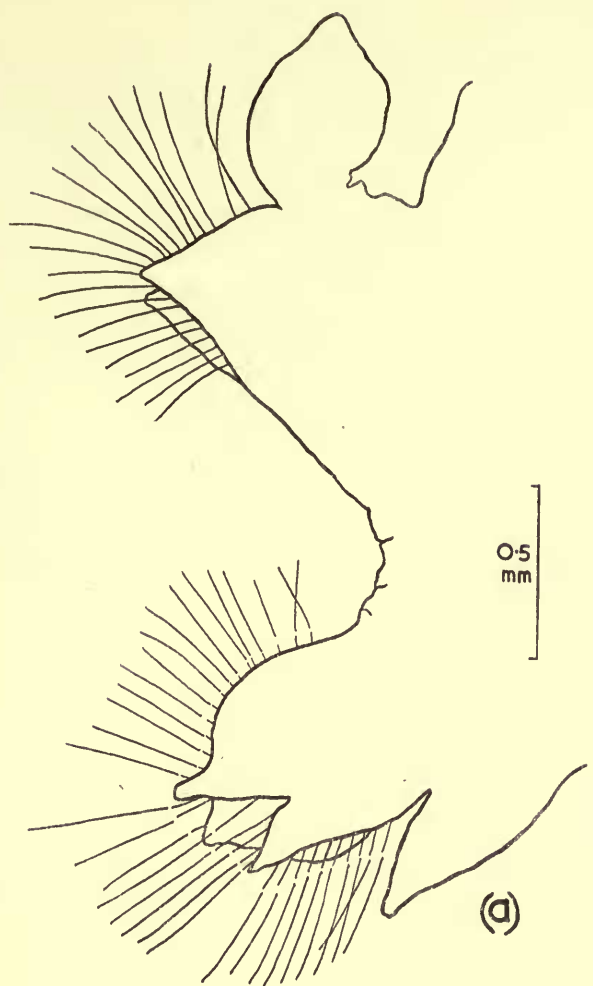


FIG. 20. *Ophioglycera archeri*, sp. n. (a) Parapodium from a posterior foot of a mature ♀; (b) papilla from the proboscis.

Family EUNICIDAE

Body elongated, with the prostomium normally having one pair of palps and one to seven antennae. First two segments normally achaetous and apodous. Sometimes one pair of tentacular cirri on the 2nd segment. Parapodia uniramous or sesquiramous. Dorsal cirrus, with or without branchiae, sometimes missing or rudimentary; ventral cirrus often absent. Chaetae simple and/or compound, showing great variety of shape. Proboscis armed with a ventral mandible and dorsal maxillae. A membranous tube is secreted by some species.

KEY TO SUB-FAMILIES

1. Prostomium reduced, without appendages (except in *Augenaria* Monro, with three minute antennae). No ventral cirri; dorsal cirri rudimentary . . . LUMBRINERINAE.
Prostomium with appendages, palps and antennae 2.
2. No ventral cirri; dorsal cirri foliaceous. Three antennae LYSARETINAE.
Ventral cirri present 3.
3. Two antennae. Maxillae of two or four longitudinal series of very small and numerous pieces DORVILLEINAE.¹
One to seven antennae. Maxillae of four or five pairs of pieces 4.
4. Seven antennae, five occipitals mounted on ringed ceratophores and two ovate frontals ONUPHIDINAE.
One to five antennae, ovate frontals absent EUNICINAE.

Sub-family EUNICINAE

KEY TO GENERA

1. Branchiae present. Five antennae 2.
Branchiae absent 3.
2. Tentacular cirri present *Eunice*.
Tentacular cirri absent *Marphysa*.
3. Three tentacles, tentacular cirri absent *Lysidice*.
One tentacle, tentacular cirri present *Nematonereis*.¹

Genus *EUNICE* Cuvier, 1817

Five antennae. One pair of tentacular cirri on the second apodous segment. Dorsal cirri elongated, ventral cirri short or knob-like. Branchiae simple or pinnate. Parapodia sesquiramous, with acicular chaetae. Simple pectinate (comb-like) chaetae, and compound chaetae. Mandible of two pieces. Maxillae with a pair of forceps and two or three pairs of toothed plates, an unpaired left plate and sometimes paragnaths.

There are manifold difficulties in identifying incomplete specimens of *Eunice*. The most important of these concerns the arrangement of those characters which appear on every parapodium, thus necessitating complete specimens for accurate diagnosis. A high degree of variability in the arrangement of branchiae, jaw plate dentition and extent of antennal annulation within any one species introduces further uncertainty. For these reasons all specific identifications of incomplete specimens are doubtful.

¹ Not recorded from the Gold Coast.

KEY TO SPECIES

1. Branchiae normally absent; when present, simple, posterior, with one filament, sometimes 2-3 *E. gracilis*.
- Branchiae, always present, pinnate 2.
2. Subacicular hooks bidentate 3.
- Subacicular hooks tridentate 4.
3. Branchiae occur only on the anterior part of the body beginning at about the 6th chaetiger *E. coccinea*.
- Branchiae occur only on the middle and posterior part of the body, beginning at about the 26th chaetiger *E. filamentosa*.
4. Branchiae first present from about the 3rd chaetiger but absent over the greater part of the body from the middle backwards *E. vittata*
- Branchiae first present from the 3rd to 7th chaetigers, and also present over the greater part of the posterior region 5.
5. Branchiae present on the last few chaetigers *E. antennata*.
- Branchiae absent from the last few chaetigers *E. rubra*.

Eunice antennata Savigny, 1818

Eunice antennata, Crossland, 1904, pp. 312-318, figs. 56-60.

Eunice antennata, Hartman, 1944a, pp. 115-117, pl. 7, figs. 154-156.

LOCALITIES. (1) Tenpobo shore, (1), anterior fragment, 28 mm. long. (2) Off Accra, Dredge in 14.6 m., shingle, 2 miles south out from the R. Densu (1), 70 mm. long, complete, and several fragments.

The antennae are clearly annulated. Pectinate branchiae, in the dredged specimen, begin on the 7th chaetiger with 9 filaments; on the 24th, 32nd and 52nd feet there are 12, 4 and 1 filament to each gill respectively. An increase to 3 filaments then takes place, which is maintained up to the last three segments on all of which there is a further reduction to one. Subacicular hooks are tridentate, compound chaetae, bidentate falcigers; simple chaetae are capillary and pectinate. There are two pairs of anal cirri, one dorsal and long, the other ventral and short.

DISTRIBUTION. Cosmopolitan in tropical and subtropical areas.

Eunice vittata (Delle Chiaje), 1829

Eunice vittata, Augener, 1918, pp. 321-323.

Eunice vittata, Fauvel, 1923, pp. 404-405, fig. 158, h-n.

Eunice vittata, Hartman, 1944a, p. 118.

LOCALITIES. (1) Tenpobo shore, (1), ant. piece. (2) Off Accra: (a) Stn. 35 (1), complete, 14 mm. long; Stn. 47 (2), anterior pieces; Stn. 69 (1) anterior piece; Stn. 88 (1), complete, 8 mm. long; (b) Dredge in 14.6 m., shingle, 2 miles south out from the R. Densu (2), complete, 10 and 19 mm., long, and nine anterior pieces.

In the specimen from Stn. 88 branchiae appear on the 3rd chaetiger with three filaments. A maximum development of 7-8 filaments occurs on the 38th foot, after which there is a reduction to one and finally branchiae are missing entirely from the posterior segments. Subacicular hooks, and chaetae, are similar to those in *E. antennata*.

DISTRIBUTION. Mediterranean, Atlantic, and Pacific.

Eunice filamentosa Grube, 1857

Eunice filamentosa, Augener, 1918, pp. 324-327, from Pram Pram.

Eunice filamentosa, Hartman, 1944a, p. 107, pl. 6, figs. 123-126.

LOCALITIES. (a) Axim shore, 13/14.iv.49 (1), 40 mm. long, complete; (b) Axim, Hospital Reef, 7.i.51 (1), 200 mm. long, complete.

In the specimen from Axim shore branchiae appear at the 29th chaetiger with one filament, gradually increase to a maximum of five and continue thus over the greater part of the body. Towards the pygidium there is a reduction to $3/4$ filaments. The subacicular hooks which appear at the 23rd foot are strongly bidentate; superior acicular have blunt, hammer-shaped ends.

The specimen from the Hospital Reef has branchiae appearing at the 26th chaetiger, the maximum number of filaments is five and this condition prevails over much of the body. There is again a gradual reduction in filament number towards the tail, but in this specimen it is carried much further, the last three chaetigers having no branchiae. Fragments of a papyraceous tube are present.

DISTRIBUTION. Tropical West Africa, Eastern and Western Tropical America.

Eunice coccinea Grube, 1878

Eunice coccinea, Crossland, 1904, pp. 297-303, pl. 20, figs. 6, 7, text-figs. 46-51.

Eunice coccinea, Fauvel, 1932, p. 136.

LOCALITY. Axim, Hospital Reef, 7.i.51 (2), one complete, 42 mm., one incomplete, 100 mm. long.

Branchiae begin on the 6th and 7th parapodia. They attain a maximum of 10-12 filaments in the anterior third and are missing throughout the rest of the body. Subacicular hooks appearing at the 25th and 28th feet, are bidentate.

DISTRIBUTION. Frequently recorded in the tropical regions of the Atlantic and Indo-Pacific, from the Gulf of Guinea to the Philippines.

Eunice gracilis (Crossland), 1904

Nicidion gracilis, Crossland, 1904, pp. 327-329, pl. 22, figs. 10-11, text-figs. 65-66.

Eunice gracilis, Fauvel, 1932, pp. 140-141, text-fig. 20.

Eunice gracilis, Day, 1949, p. 447.

LOCALITIES. (1) Accra, (a) Christiansborg shore, 17.iii.49 (2), complete, 7 and 11 mm. long; (b) Dredge 8 fathoms, shingle, 2 miles south of R. Densu (1), complete, 20 mm. long. (2) Dixcove, shore (10), five complete, 15-42 mm. long. (3) Axim, (a) Shore, 13/14.iv.49 (1), complete, 24 mm. long; (b) Lighthouse Reef, 8.i.51 (1), complete, 20 mm. long; (c) Hospital Reef, 13.iv.49 (1), complete, 22 mm. long; 7.i.51 (10), seven complete, 10-18 mm. long.

Simple chaetae are capillaries and comb-like; compound chaetae are bidentate. Subacicular chaetae appear at about the 25th foot and are also bidentate; there is one to each parapodium compared with two in *E. cincta* Kinberg, (see Hartman,

1948, p. 80, on a re-examination of Kinberg's types). For this reason the synonymy proposed by Fauvel (1950) including *E. gracilis* as a synonym of *E. cincta* has not been accepted here. Antennae barely reach back to the 1st chaetiger; tentacular cirri have frequently been lost. No branchiae are present; anteriorly dorsal cirri are well-developed.

There has been much discussion about the generic status of this species. Originally designated a species of *Nicidion* because of the lack of branchiae, Fauvel (1932) and Day (1949) have reported gills sometimes present on extreme posterior segments, and for this reason the species is regarded as a *Eunice*.

DISTRIBUTION. Indian Ocean—Zanzibar, Gulf of Manaar, Mergui peninsular—and Atlantic Ocean. St. Helena and the Gold Coast.

Eunice rubra Grube, 1856

Eunice rubra, Augener, 1918, pp. 319–321, from Pram Pram, and the Island of Rolas, in the Gulf of Guinea.

This species has not been found in the present collections. The antennae are clearly annulated, branchiae begin at the 5th chaetiger and subacicular hooks are tridentate.

DISTRIBUTION. This species is common on the south-eastern coast of the U.S.A.

Genus *MARPHYSA* Quatrefages, 1865

Five antennae, two eyes. Tentacular cirri absent, dorsal cirri elongated; ventral cirri short. Branchiae simple or pectinate. Dorsal chaetae simple capillaries. Ventral chaetae simple or compound, comb chaetae, and acicular chaetae also present. Mandible of two pieces. Maxillae with a pair of forceps, two pairs of toothed plates, an unpaired plate and sometimes paragnaths.

Marphysa dartevellei Monro, 1936

Marphysa dartevellei Monro, 1936b, pp. 246–248, 6 figs, from the Congo coast, Cape Malemba, 85 km. north of Banana, from holes of *Lithodomus*.

LOCALITIES. (1) Tenpobo shore, 5.ii.50 (1), 325 mm. long, complete. (2) Accra, Christiansborg shore, 19.xi.49 (2), anterior pieces, 85 and 35 mm. long. (3) Axim, (a) Shore, 13/14.iv.49 (2), anterior pieces, 26 and 35 mm. long; (b) Hospital Reef, 7.i.51 (1), 58 mm. long, complete.

The antennae are unarticulated, equal in length, measuring only a little longer than the head; between the laterals there are two black eyes. Dorsal cirri are smooth and slender decreasing in length posteriorly. Ventral glandular pads are present after the first few chaetigers. Ventral cirri are well developed stumps in the anterior feet, but posteriorly become little more than tubercles at the top of the glandular pads. Pectinate branchiae begin between the 32nd to 40th chaetigers. They have a maximum of four to five filaments and are present over the greater part of the middle body region. In the complete specimen from Tenpobo there are 86

abbranchiate segments posteriorly preceded by a large number of segments in which reduction to one filament has taken place.

In the anterior parapodia compound chaetae are spinigers and posteriorly are falcigers. Monro's original specimens were not complete and his suggestion that falcigerous compound chaetae replace spinigers posteriorly is here substantiated. Simple capillary chaetae occur throughout the body, simple comb-chaetae are present in the middle body region but are often difficult to find posteriorly.

There are two pairs of anal cirri, one pair elongated and dorsal, the other ventral and short.

DISTRIBUTION. This species is known only from the above records.

Genus *LYSIDICE* Lamarck, 1818

Three antennae. Tentacular cirri absent. Branchiae absent. Chaetae, simple capillaries, comb-like, compound falcigers and acicular. Mandible of two pieces. Maxillae with a pair of forceps, two toothed plates, an unpaired plate and paragnaths.

KEY TO SPECIES

1. Eyes round ; antennae small, never reaching as far as the anterior border of the prostomium *L. ninetta*.
2. Eyes reniform ; antennae reaching to the anterior border of the prostomium, sometimes further *L. collaris*.

Lysidice ninetta Audouin & Milne-Edwards, 1834

Lysidice ninetta, Augener, 1918, pp. 362-364.

Lysidice ninetta, Fauvel, 1923, pp. 411-412, fig. 162, a-g.

LOCALITIES. Off Accra: Stn. 48 (1), 13 mm. long, complete; Stn. 62 (1), 6 mm. long, anterior piece; from wood netted in 14 metres off Chorkor (1), 21 mm. long, complete.

For further details see below under *L. collaris*.

Lysidice collaris, Grube, 1869

Lysidice collaris, Crossland, 1903, pp. 143-144.

Lysidice collaris, Fauvel, 1932, pp. 143-144.

Lysidice collaris, Day, 1951, pp. 39-40.

LOCALITY. Off Accra, Stn. 62 (1), 22 mm. long, complete.

Differences, other than those noted in the above key, which serve to separate these two species are (a) a marked indentation on the anterior border of the prostomium compared with the almost entire border in *L. ninetta*, and (b) the greater development of the dorsal cirri in *L. ninetta*.

The form of the jaw articles do not differ sufficiently to warrant emphasis. Day (1951) has shown that this character is of value in differentiating between *L. collaris* and *L. natalensis*, particularly with respect to maxillae II. In *L. collaris* and *L.*

ninetta, however, the former has four teeth on each article of maxillae II, the latter varying between 4-4 and 4-5.

Chaetae are similar in both species. The simple types, capillaries and comb-like, are dorsal, the compound, with bidentate terminal articles, are ventral. In both species there are two pairs of anal cirri, a long dorsal pair and a short ventral pair.

DISTRIBUTION. *L. ninetta* is known extensively from, the European area in which *L. collaris* is unknown. There appears, however, to be a general overlap of the two species in the Pacific Panama, West African and Indian Ocean regions. *L. collaris* has been frequently recorded from the Indo-Pacific region, from Australia, China, Philippines, Japan, etc., in which areas no valid record of *L. ninetta* appears to have been made. The record of this latter species from New Zealand (Fyfe, 1952, p. 19) doubtfully accepted by Fauvel (1923, p. 411) and detailed by Augener (1924) as *L. brevicornis* Kinberg, is almost certainly *L. collaris*.

Subfamily ONUPHIDINAE

KEY TO GENERA

- | | |
|--|-------------------|
| 1. Branchial filaments inserted spirally | <i>Diopatra</i> . |
| 2. Branchial filaments simple or pectinate | <i>Onuphis</i> . |

Genus *DIOPATRA* Audouin & Milne-Edwards, 1833

Seven antennae, of which two are small frontals and five occipitals borne on ringed ceratophores. One pair of clear, translucent, circular areas posterior to the inner laterals, which are probably sensory in function. One pair of tentacular cirri on the apodous peristomium. Dorsal cirri subulate; ventral cirri subulate in a few anterior segments thence becoming pad-like. Pseudo-compound chaetae in anterior segments, otherwise with simple capillary, comb-like and acicular chaetae. Branchiae large with filaments inserted spirally. Mandible of two pieces. Maxillae with a pair of forceps, three pairs of toothed plates and one unpaired plate. Tube parchment-like with agglutinated material of varying types.

KEY TO SPECIES

- | | |
|---|--------------------------|
| 1. Tip of the shaft of the comb-chaetae continued as a central spike (Text-fig. 21, a).
Tube as in Text-fig. 22, a | <i>D. musseraënsis</i> . |
| 2. Tip of the shaft of the comb-chaetae not so continued. Tube as in Text-fig. 22, b.
D. neapolitana. | |

Diopatra musseraënsis Augener, 1918

Diopatra musseraënsis Augener, 1918, pp. 347-349, pl. 5, fig. 134; pl. 6, fig. 195; text-fig. 38, from Angola.

LOCALITIES. (1) Off Accra, dredge, 14.6 metres, in shingle 2 miles south from the mouth of the R. Densu (1), incomplete, 40 mm. long. (2) Winneba shore, 22.xi.49 (5), incomplete, 25-120 mm. long, with tubes measuring 160-240 mm. in length.

Strongly spiralled branchiae are present on about 50 chaetigers. The anterior dorsal surface is uniformly coloured mauve.

Chaetae are in well-defined groups. Prominent comb-chaetae (Text-fig. 21, *a*) are dorsal and anterior, they project almost as far as the stout winged capillaries which form a large group ventral to them. A bulbous parapodial cirrus projects beneath this latter group and divides the anterior set of pseudo-compound bristles from a

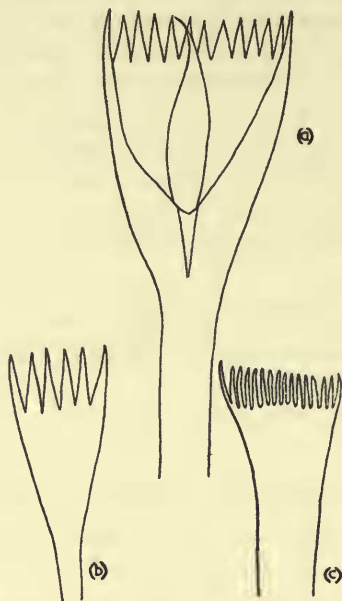


FIG. 21. Comb-chaetae of (*a*) *Diopatra musseraënsis*, $\times 500$; (*b*) and (*c*) *Diopatra neapolitana*, $\times 750$.

small posterior group of capillaries. The pseudo-compound chaetae number four to a parapodium and have a darker brown terminal piece apparently grafted on to the light brown basal portion. This gives the effect of a possible articulating surface. Vento-anteriorly to the ramal cirrus are two bidentate subacicular chaetae, which first appear at about the 17th parapodium.

DISTRIBUTION. Known only from the above records.

Diopatra neapolitana Della Chiaje, 1841

Diopatra cuprea, Augener, 1918, pp. 350-354, text-fig. 39, from Elmina and Accra, Gold Coast, etc.

Diopatra neapolitana, Fauvel, 1923, pp. 419-420, fig. 166, *a-h*.

Diopatra neapolitana, Fauvel, 1933, pp. 28-37, figs. 3-4.

LOCALITIES. Off Accra: Stn. 6 (1), + tube; Stn. 16 (1); Stn. 27 (1), + tubes; Stn. 53 (1); Stn. 57 (34), + tubes; Stn. 58 (6), + tubes; Stn. 59 (1); Stn. 61 (1), + tubes; Stn. 70 (6); Stn. 73 (6), + tubes, one specimen complete, 30 mm. long; Stn. 110 (1), with tube; Stn. 111 (1), with tube; Stn. 126 (1), complete, 27 m. long. Apart from the specimens from Stns. 73 and 126, all are less

than 15 mm. in length and are anterior fragments. Buchanan Survey, 3.6 to 11.0 metres off Accra (7), incomplete, up to 30 mm. in length.

In the complete specimen from Stn. 126 branchiae begin on the 5th parapodium and are spiralled up to the 30th foot, after which they become branched with one or two filaments for 10 segments and then disappear. The anterior dorsal surface is skin-coloured, crossed, in some specimens, by lateral stripes of pale mauve.

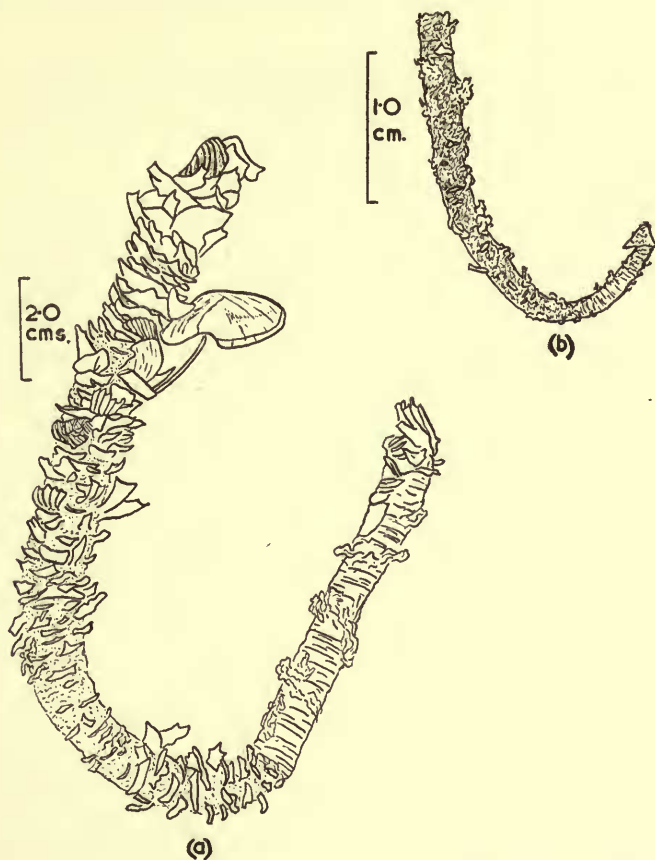


FIG. 22. Tubes of (a) *Diopatra musseraënsis*, (b) *Diopatra neapolitana*.

The form of the comb-chaetae in these specimens is illustrated in Text-figs. 21, b-c. These chaetae were exceedingly difficult to find and in no specimens were they as liberally distributed among the parapodia as in *D. musseraënsis*.

Fauvel (1932 & 1933) has drawn attention to the variation in form of the comb-chaetae in this species, and examination of the Gold Coast specimens supports his conclusions. In one specimen, for example, comb-chaetae with 6 and 14 teeth are present. For this reason Augener's record of 1918 of *D. cuprea* has been included as a synonym of *D. neapolitana*. With the exception of the scarcity of comb-chaetae

in *D. neapolitana* the distribution of chaetae in the parapodia is very similar to that in *D. musseraënsis*.

DISTRIBUTION. Atlantic Ocean, Mediterranean Sea, Red Sea, Indian and Pacific Oceans.

Genus **ONUPHIS** Audouin & Milne-Edwards, 1833

Similar to *Diopatra* except that branchiae are not spirally coiled, but either simply branched or pectinate.

Onuphis eremita Audouin & Milne-Edwards, 1833

Onuphis landanaënsis, Augener, 1918, pp. 339-343, pl. 5, figs. 135-138, pl. 7, fig. 197, text-fig. 36.

Onuphis eremita, Fauvel, 1923, pp. 414-415, fig. 163, a-l.

LOCALITIES. (1) Tenpobo shore, about 30 specimens with tubes, some complete, measuring 30 mm. in length; associated with *Audouinia punctata*. (2) Off Accra: Stn. 57 (3), fragments, up to 18 mm. long; Stn. 12 (1), anterior piece.

Eyes are absent in this species. Branchiae begin on the first chaetiger with one filament; after 10 to 20 segments there is a gradual increase to a maximum development of five filaments. There are tri- or bidentate hooded pseudo-compound chaetae in the first three to five feet. Other chaetae are simple limbate capillaries and comb-like; acicular chaetae are bidentate. The specimens from Tenpobo are much smaller than those described by Fauvel. Tubes are of agglutinated sand grains with a few shell fragments.

DISTRIBUTION. Atlantic Ocean, Mediterranean Sea, Suez Canal, Madagascar, Ceylon, Madras, Mergui, Akyab, Caribbean Sea, and off the coast of South California down to Guatemala.

Subfamily LUMBRINERINAE

Genus **LUMBRINERIS** Blainville, 1828

Body long and cylindrical. Prostomium without palps, antennae or eyes. First two segments apodous and achaetous. Branchiae absent. Parapodia with two unequal ligules. Simple winged capillary chaetae and simple or compound hooks. Mandible bodice-like. Maxillae with four pairs of plates and two supports.

KEY TO SPECIES

1. Prostomium conical, pointed anteriorly; no compound hooded hooks, simple hooks as Text-fig. 23, c *L. impatiens*.
2. Prostomium rounded, blunt anteriorly with some compound hooded hooks (Text-fig. 23, a), simple hooks as in Text-fig. 23, b *L. albifrons*.

Lumbrineris impatiens (Claparède), 1868

Lumbriconereis impatiens, Fauvel, 1923, pp. 429-430, fig. 171, a-i.

LOCALITIES. (1) Tenpobo shore, 4.ii.50 (1), anterior piece 13 mm. long. (2) Accra, Christiansborg shore (2), one complete, 78 mm. long; one fragment, 20 mm. long.

Parapodia with a short, anterior, rounded lobe, and a long, posterior, cirriform ligule. Anterior parapodia have simple winged chaetae and simple hooks with denticles and guard. The capillaries are gradually replaced in the middle and posterior region, leaving only two or three simple hooks (Text-fig. 23, c) to each chaetiger. The large maxillary plates II have four teeth each, III 2 + 2 and IV 1 + 1. The maxillary supports are much longer than those described by Fauvel.

DISTRIBUTION. Atlantic Ocean, Mediterranean, Red Sea, Persian Gulf, Indian Ocean.

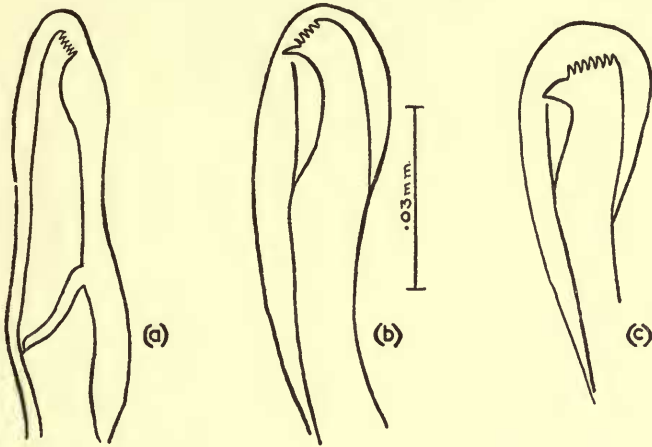


FIG. 23. Chaetae of *Lumbrineris*. (a) Compound hooded hook of *L. albifrons*, (b) simple hooded hook of *L. albifrons*, (c) simple hooded hook of *L. impatiens*.

Lumbrineris albifrons (Crossland), 1924

Lumbriconereis albifrons Crossland, 1924, pp. 50-55, text-figs. 65-72, from the Cape Verde Islands.

LOCALITY. Off Accra, from wood netted off Chorkor 24.v.51 (2), complete, 75 and 22 mm. long.

This species is characterized by the form of the compound chaetae (Text-fig. 23, a). These are, however, exceedingly difficult to find. The dental apparatus is illustrated in Text-fig. 24 and also serves to distinguish the species from closely related forms. Simple winged capillary chaetae are present with hooded hooks anteriorly, but are replaced by the latter posteriorly. As in *L. impatiens*, anterior parapodial lobes are short, posterior lobes are long.

DISTRIBUTION. The only authentic records of this species are those noted above; the records by Monro (1933) from the Galapagos Islands and Pruvot (1930) from, New Caledonia are of doubtful significance.

Subfamily LYSARETINAE

Apart from the characters noted above in the key, the following are of importance in this subfamily. Mandible of two pieces, maxillae with five pairs of symmetrical toothed plates and two long supports (Text-fig. 25).

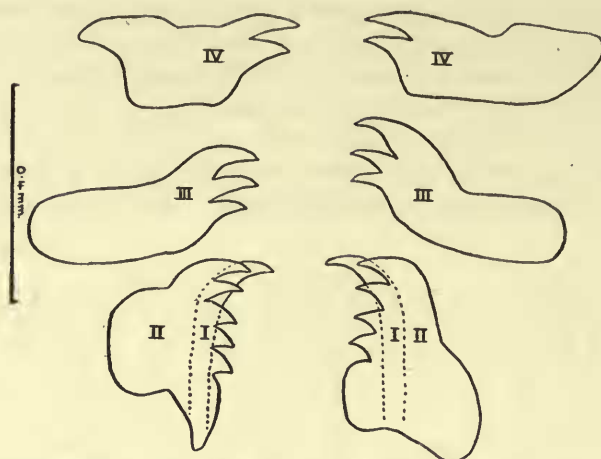


FIG. 24. *Lumbrineris albifrons*. Maxillae I to IV from the ventral surface.

Genus *HALLA* Costa, 1844

Prostomium oval with four eyes and three antennae on its posterior border. There are two anterior apodous and achaetous segments and no tentacular cirri. The dorsal cirri are large and foliaceous; all chaetae are simple and acicular chaetae are present. Maxillae asymmetrical with two very long maxillary supports, (Text-fig. 25.)

Halla parthenopeia (Delle Chiaje), 1828

Halla parthenopeia, Fauvel, 1923, pp. 426-427, fig. 169, *a-h*, from Naples, Gênes and Cadiz.

LOCALITY. Off Accra, Buchanan Survey, in 3.6 to 11.0 metres depth (3), two anterior and one posterior pieces, between 85 and 110 mm. long.

Collector's note: "This worm is brick-red in life, blue in preservative. Grows up to 25 in. (625 mm.) long."

The specimens agree very well with Fauvel's description. The superior dorsal chaetae, however, are not as hispid as presented in his figure. Maxillary plates are illustrated in Text-fig. 25 and show the plates to have the following teeth: I 11-7, II 12-15, III 10-9, IV 11-11, V 1-1. There is, however, variation in this character and in the other specimens here examined the formulae is: I 11-8, II 12-13, III 16-12 +, IV 17-12, V 1-1. Many of the teeth are frequently broken, making accurate counting difficult. A dorsal incision was made in the pharynx in order to prepare Text-fig. 25, and the sets of teeth turned outwards. It appears, therefore, as if maxillae I and II of the right hand side worked against each other. In effect this maxillae I, with the basal portion of II, bites against I of the left hand side during mastication.

The large, foliaceous, dorsal cirri each bear an external notch basally, and the chaetae project laterally between the parapodial lobe and a secondary, anterior pedal flap.

DISTRIBUTION. This appears to be the first record of this species in the Atlantic Ocean, south of Cadiz.

Family ORBINIIDAE

Body divided into two regions: (a) thorax, short and flat with few segments, neuropodia flattened pads with or without stout bristles; (b) abdomen, long and cylindrical, with numerous segments, neuropodia erect. Prostomium without ap-

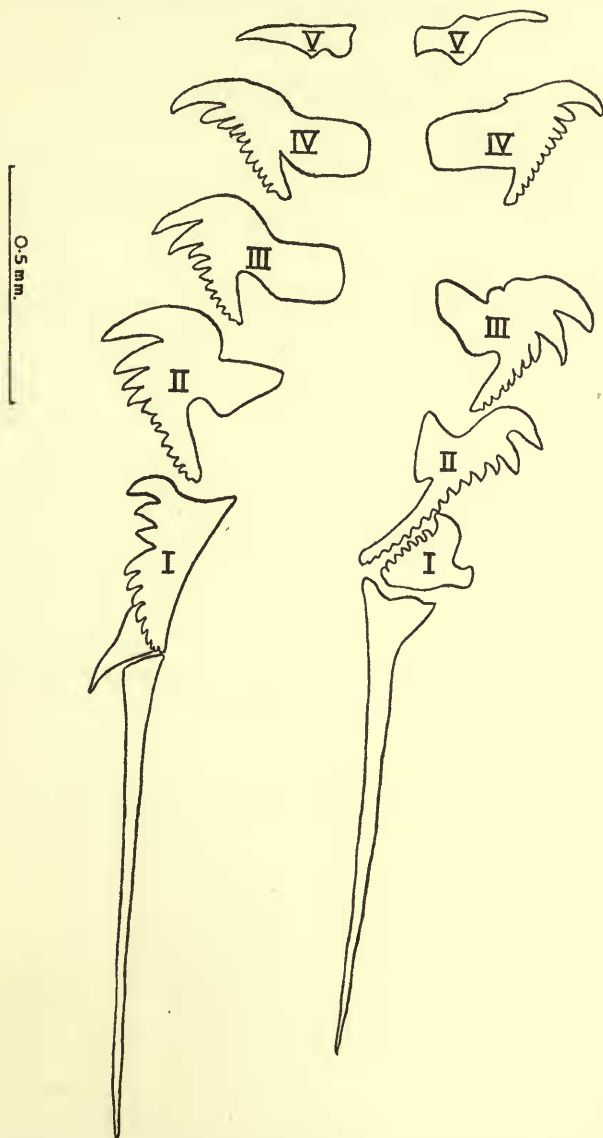


FIG. 25. *Halla parthenopeia*. Maxillae from the dorsal surface. (See text, p. 120, for explanation.)

pendages. Proboscis unarmed. Parapodia biramous with simple chaetae. Branchiae dorsal. Transverse rows of papillae often present on the ventral side of a number of thoracic segments.

KEY TO GENERA

1. Thoracic neuropodia with vertical rows of pedal papillae *Orbinia*.
 Thoracic neuropodia without vertical rows of papillae or with only 2-3 2.
2. Thoracic neuropodial chaetae entirely slender, pointed *Haploscoloplos*.¹
 Thoracic neuropodial chaetae include pointed and hook-like ones *Scoloplos*.

¹ Not recorded from the Gold Coast.

Genus *ORBINIA* Quatrefages, 1865

Prostomium conical. One pair of lanceolate gills on each segment except a few anterior ones. Thoracic notopodia with serrated capillary chaetae; neuropodia pad-like with stout chaetae and papillae. Abdominal notopodia with capillary and forked chaetae; neuropodia bilobed with capillary chaetae.

Orbinia foetida var. *linguistica* (Orlandi), 1896

Aricia foetida var. *linguistica*, Fauvel, 1927a, pp. 14-16, fig. 4, a-l.

LOCALITY. Off Accra, Buchanan Survey, in 3.6 to 11.0 metres (1), incomplete, 26 mm. long.

There are 22 segments in the thorax, branchiae begin on the 7th and ventral papillae appear on the 16th segment, with one pair and gradually increase to five pairs on segment 21; they are absent from segment 22. There are eight papillae on the posterior neuropodial lobe. Large lanceolate chaetae appear on the 11th to the last thoracic chaetiger. Between rami on abdominal segments there are pronounced cirri.

DISTRIBUTION. This variety appears to have been recorded only from the Mediterranean Sea, but the stem species is widely known from the English Channel and Atlantic Ocean and has been collected at Madagascar.

Genus *SCOLOPLOS* Blainville, 1820

Similar to *Orbinia*, but without pedal papillae or with only very few, 1-3, and never with inter-ramal cirri.

KEY TO SPECIES

1. With capillary chaetae in anterior thoracic neuropodia 2.
 Without capillary chaetae in anterior thoracic neuropodia; with 23 thoracic segments, with branchiae beginning at the 6th; with 3 rows of hooks in thoracic neuropodia *S. johnstonei*.¹
2. With pedal papillae on anterior thoracic neuropodia; with 12 to 20 thoracic segments, with branchiae beginning at the 9th to 17th. *S. armiger*.¹
 Without pedal papillae on anterior thoracic neuropodia 3.
3. Branchiae begin on anterior thoracic segments *S. dubia* sp. n.
 Branchiae begin on posterior thoracic or anterior abdominal segments *S. madagascarensis*.

¹ Not recorded from the Gold Coast.

Scoloplos madagascarensis Fauvel, 1919

Scoloplos madagascarensis Fauvel, 1919, pp. 433-434, pl. 17, figs. 81-86.

LOCALITY. Off Accra, Buchanan Survey, in 3.6 to 11.0 metres (2), anterior pieces, each 33 mm. long; there are also two median pieces which may be detached portions of the anterior parts.

In one of the anterior pieces the thorax is made up of 21 segments, of which the first nine have two rows of neuropodial hooks and the remainder one. Branchiae appear on the last thoracic segment, on which there is also one pedal papilla. In the other anterior piece there are 26 thoracic segments, all of which have one row of neuropodial hooks. Branchiae appear on the first abdominal segment. This piece is without pedal papillae.

Both specimens have a few short forked chaetae in abdominal notopodia, one arm of the fork being about twice as long as the other. These chaetae are very easily broken and difficult to find.

Fauvel (1919) originally described *S. madagascarensis* with a thorax of 26-27 segments and with branchiae appearing at the 21st or 22nd segments becoming fully developed at the 25th or 26th. It will be seen that the specimens from Accra agree in one or other of these characters, and it is suggested that the species may be more variable than has hitherto been indicated.

DISTRIBUTION. Previously recorded from Madagascar and Inhaca Island, Delgoa Bay, Transvaal (Day, 1951).

Scoloplos dubia sp. n.

Holotype; B.M. (N.H.) Reg. No. 1953.3.1.1230.

LOCALITY. Off Accra, Buchanan Survey, in 3.6 to 11.0 metres depth, complete, about 90 mm. long.

The sharply pointed prostomium is without visible eyes. There are 22 thoracic segments. Thoracic neuropodial capillaries (Text-fig. 26, *a*) appear on every foot; notopodial chaetae throughout the body are similar to these. Forked notopodial chaetae have not been seen. Thoracic neuropodial hooks are shown in Text-fig. 26, *b*, they occur in three to four rows on each segment. In the posterior region of the abdomen the neuropodial aciculae become external and hooked (Text-fig. 26, *c*).

Paratypes; B.M. (N.H.) Reg. No. 1953.3.1.1231-4, from the same locality as the holotype.

These specimens are all incomplete, the longest measuring 65 mm. In all of them the branchiae appear at the 7th foot; in two the thorax has 22 segments, in one 21 and in the other 23. In other characters they are identical with the holotype.

As suggested by its name the status of this new species is doubtful. It is undoubtedly closely related to *S. johnstonei*, from which it is distinguished principally in having thoracic neuropodial capillaries and posterior hooked aciculae. Examination of material from areas between the Gold Coast and the Cape of Good Hope (the distributional zone of *S. johnstonei*) may clarify the relationship.

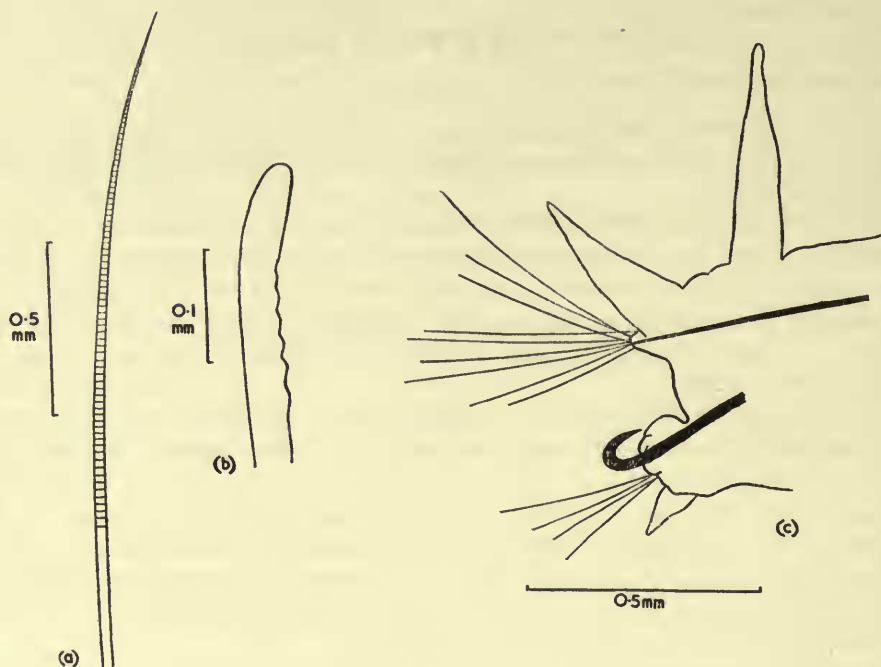


FIG. 26. *Scoloplos dubia* sp. n. (a) Thoracic neuropodial chaeta, (b) thoracic neuropodial hook, (c) posterior abdominal parapodium.

Family SPIONIDAE

Body not divided into distinct regions. Prostomium without antennae; (sometimes with frontal peaks); with palps and eyes. Biramous parapodia with foliaceous ventral and dorsal cirri; dorsal branchiae on a number of segments. Chaetae simple capillaries and hooded hooks.

Genus *PRIONOSPIO* Malmgren, 1867

Prostomium without frontal peaks. Branchiae 3–11 pairs, often pinnate, confined to anterior segments. Simple capillaries and pluridentate hooded hooks are present.

Prionospio pinnata Ehlers, 1901

Prionospio africana, Augener, 1918, pp. 402–5, pl. 6, figs. 162–3, text-fig. 51.

Prionospio pinnata, Fauvel, 1932, p. 173.

LOCALITIES. Off Accra, Stn. 69 (2), incomplete, both 7 mm. in length; Buchanan Survey, off Accra, 3.6 to 11.0 metres, depth (7), one complete, 55 mm. long, others incomplete 10–41 mm. long.

Pinnate branchiae, if present, occur on the first three chaetigers only, frequently they have been accidentally lost. Several of the specimens from the Buchanan

Survey still retain one of the long pair of palps, which extends from the posterior region of the prostomium to the 16th chaetiger. The palps are somewhat curved and grooved dorsally (Text-fig. 27). Their external margin is marked with mauve

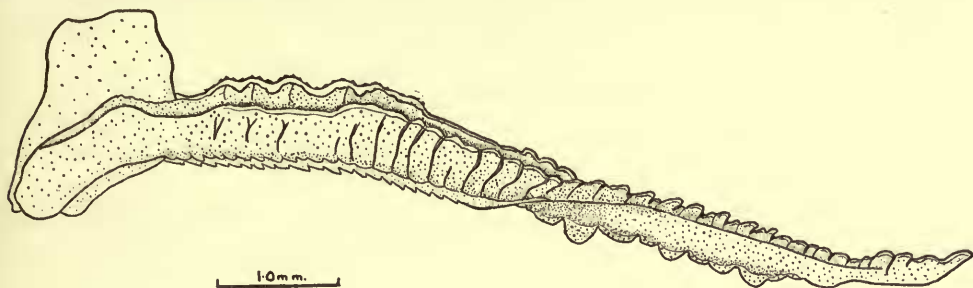


FIG. 27. *Prionospio pinnata*. Grooved palp from the left hand side of the prostomium. (Specimen from the Buchanan Survey.)

vertical stripes. Four eyes are set in a trapezium on the prostomium, which is enclosed between two membranous wings. Within these wings the prostomium consists of a prominent longitudinal ridge.

DISTRIBUTION. Atlantic Ocean, Indian Ocean and Pacific Ocean.

Family CIRRATULIDAE

Body short, cylindrical, with numerous segments; head without appendages, with or without eyes. Proboscis smooth, unarmed. Dorsal palps or tentacular cirri on an anterior segment; long slender branchiae inserted above the notopodia; parapodia biramous; chaetae simple capillaries and acicular hooks.

KEY TO GENERA

1. Branchiae appearing on the same segment as the tentacular cirri *Cirratulus*.
2. Branchiae appearing on a few segments in front of the one bearing tentacular cirri
Audouinia.

Genus *AUDOUINIA* Quatrefages, 1865

First three segments achaetous. Branchiae occur on the first chaetigers to nearly the last ones. Of the three species of this genus recorded here, each is confined to a particular area of the Gold Coast. Thus *A. punctata* has been found only in the Tenpobo area; *A. tentaculata* only on the Winneba shore, and *A. filigera* only in the Sekondi-Axim region. No overlap has been noted.

KEY TO SPECIES

1. Branchiae in the middle body region situated half the distance above the notopodium that the notopodium is above the neuropodium *A. tentaculata*.
- Branchiae in the middle body region situated much more than half the distance above the notopodium than the notopodium is above the neuropodium 2.

2. One hook in the neuropodium in the posterior part of the body. Branchiae in the middle body region situated, normally, much further than twice as far above the notopodium as the notopodium is above the neuropodium *A. filigera*.
 Three or more hooks in the neuropodium in the posterior part of the body.
 Branchiae in the middle body region situated at least as far above the notopodium as the notopodium is above the neuropodium *A. punctata*.

***Audouinia tentaculata* (Montagu), 1808**

Cirratulus tentaculatus var. *meridionalis*, Augener, 1918, pp. 461-463, pl. 6, fig. 175-176.

Audouinia tentaculata, Fauvel, 1927a, pp. 91-92, fig. 32, a-g.

LOCALITY. Winneba shore, 22.xi.49 (20), between 18-35 mm. long, and another ten specimens, badly mutilated, in association with tubes of *Sabellaria eupomatoides* from this area collected on the same day.

The tentacular cirri appear between the 6th and 7th chaetigers. Typically there are two hooks in the neuropodia over the greater part of the body, though for some segments after the 12th foot there may be three to four.

DISTRIBUTION. Common in the European zone from the North Sea, Irish Sea, English Channel and the Atlantic Ocean. Known also from German South-West Africa (Augener, 1918) and the Cape (Day, 1951).

***Audouinia filigera* (Delle Chiaje), 1841**

Audouinia filigera, Fauvel, 1927a, pp. 92-93, fig. 32, h-m.

Audouinia filigera, Fauvel, 1932, p. 178.

LOCALITIES. (1) Sekondi, high level plateau, 21.ii.49 (4), complete, up to 20 mm. long. (2) Dixcove, shore (12), mutilated, 20-40 mm. long. (3) Princes Town, shore, 15.iv.49 (4), complete, 20-25 mm. long. (4) Axim, Hospital Reef (3), 10-12 mm. long.

The tentacular cirri occur between the 4th and 5th chaetigers. After the appearance of two neuropodial hooks at the 12th foot, which persist for a small number of segments, there is a reduction to one, which condition is maintained up to the end of the body.

DISTRIBUTION. Well known from the Atlantic Ocean, Persian Gulf, and the Indian and Pacific Oceans.

***Audouinia punctata* (Grube), 1858**

Cirratulus punctatus, Augener, 1918, pp. 465-467.

Audouinia punctata, Day, 1951, p. 47.

LOCALITY. Tenpobo shore, approximately 370 specimens, measuring up to 20 mm. long were collected here during February, 1950.

The tentacular cirri are situated between the 3rd and 4th chaetigers. There are normally three hooks in the neuropodium over the greater part of the body, but anteriorly (i.e. just after the 12th parapodia) there may be a reduction to two and posteriorly an increase to four. Colour in spirit grey-black, flecked with black, but considerable areas of white may be present; white to grey tentacular cirri with

black lateral stripes ; gills grey black with sometimes an orange tip ; young forms brown.

DISTRIBUTION. This species is known from the Atlantic, south of Florida to the Cape of Good Hope, and from the Natal coast.

Genus *CIRRATULUS* Lamarck, 1818

Similar to *Audouinia* except as in above Key.

Cirratulus filiformis Keferstein, 1862

Cirratulus filiformis Fauvel 1927a, pp. 94-95, fig. 33, h.

LOCALITY. Off Accra, Buchanan Survey, in 3.6 to 11.0 metres (5), all incomplete, the largest piece measuring 38.0 mm. long.

The prostomium is sharply pointed, and has no eyes. On the 1st chaetiger there is one pair of long and filiform branchiae and these are present up to the end of the body. All chaetae are simple capillaries, there are no hooks present. Anteriorly segments are narrow ; posteriorly they are long.

DISTRIBUTION. This species is well known from West European waters and has been reported from Senegal by Fauvel (1902).

Family FLABELLIGERIDAE

Prostomium and peristomium with eyes, palps and branchiae, completely retracted into the oral aperture, made visible only by dissection. Chaetae of anterior segments long, directed forwards to form a cephalic cage. Parapodia biramous and normally without distinct processes. Notopodial chaetae simple ; neuropodial chaetae sigmoid or hooked or compound with a sickle-shaped terminal piece.

Genus *STYLARIOIDES* Delle Chiaje, 1828

Body elongated, with numerous papillae on its surface. Prostomium with two stout palps. Branchiae filiform, on a peduncle, retractile. Notopodial chaetae simple capillaries, annulated ; neuropodia with simple capillaries and sometimes with strong hooks.

KEY TO SPECIES

- | | | | | | |
|--|---|---|---|---|----------------------------|
| 1. Neuropodial chaetae long and slender throughout | . | . | . | . | <i>S. scutigeroideis</i> . |
| Some neuropodial chaetae hooks | . | . | . | . | 2. |
| 2. Neuropodial hooks with bidentate tips | . | . | . | . | <i>S. arenosus</i> . |
| Neuropodial hooks with entire tips | . | . | . | . | <i>S. tropicus</i> . |

Stylarioides scutigeroideis Augener, 1918

Stylarioides scutigeroideis Augener, 1918, pp. 444-447, pl. 6, figs. 155 and 185, text-fig. 66.

LOCALITIES. Off Accra : Stn. 55 (1) ; Stn. 69 (4) ; Buchanan Survey, in 3.6 to 11.0 metres (5), only four of these specimens are complete, measuring between 15 and 30 mm. in length.

The complete body consists of 70 parapodia. The 1st chaetiger is telescoped into the 2nd, the 2nd into the 3rd and the 3rd into the 4th. Thereafter the segments are separated only by intersegmental grooves anteriorly and ridges posteriorly.

Chaetae of the first parapodia vary between 2.5 to 4.5 mm. in length (Text-fig. 28, *a* and *b*) and are directed forward, forming the characteristic cephalic cage of the Flabelligeridae. Chaetae of the second parapodia are between 1 and 2.5 mm. long and are also directed anteriorly. Thereafter the chaetae decrease in size and project laterally. Notopodia and neuropodia in the first and second parapodia are close together, elsewhere they are far apart. The anterior region of the body is swollen, posteriorly it narrows, so that in one specimen the width across the 12th segment is 2.5 mm. and across the 30th, 0.5 mm. Except for a few posterior segments the body is heavily encrusted with sand grains.

All chaetae are long and slender; notopodial bristles are illustrated in Text-fig. 28, *d*, neuropodial bristles in Text-fig. 28, *c*. Papillae are present all over the body but are hidden to superficial view by the heavy encrustation of sand. On the first and second parapodia a single finger-shaped papilla, which may be bi- or trifid terminally, is associated with each group of chaetae, and there are sometimes one or two interrampal in position. On the 3rd and 4th chaetigers simple finger-shaped papillae are present between the rami, encircling the segments like coronets. There are 6-7 dorsally between the notopodia, 2-3 laterally between the notopodia and neuropodia and 6-7 ventrally between the neuropodia. After the 5th segment the papillae become smaller and more scattered in arrangement. Posteriorly they are less numerous.

DISTRIBUTION. *S. scutigeroideus* is known only from the Gold Coast, the French Congo and Cabinda.

Stylarioides arenosus (Kinberg), 1867

Pycnoderma fernandense, Augener, 1918, pp. 448-452, pl. 6, figs. 148, 182; pl. 7, figs. 237, 238; text-fig. 67, from Saltpond, Gold Coast.

This species has not been collected in the present survey. Stout neuropodial chaetae, with bidentate tips appear at the 5th chaetiger. The secondary tooth at the tip is easily broken and the chaetae have frequently been described as unidentate. Papillae run along the body in longitudinal rows between the rami. Normally there are between 10 to 12 to each segment, four ventral and four dorsal and one or two laterally. One of Augener's largest specimens measured 39 mm. long for 75 segments, but Hartman (1948) found one of Kinberg's types measured 60 mm. for 70 segments.

DISTRIBUTION. Around the coast of Africa from the Gold Coast to Natal.

Stylarioides tropicus Augener, 1918

Stylarioides tropicus Augener, 1918, pp. 437-440, pl. 7, figs. 220, 221, text-fig. 63.

This species has not been collected in the present survey. It appears to be characterized by strong hooks with entire tips which appear at the 4th chaetiger, otherwise Augener's description is difficult to follow. One of Augener's specimens measured 24 mm. long for 32 segments.

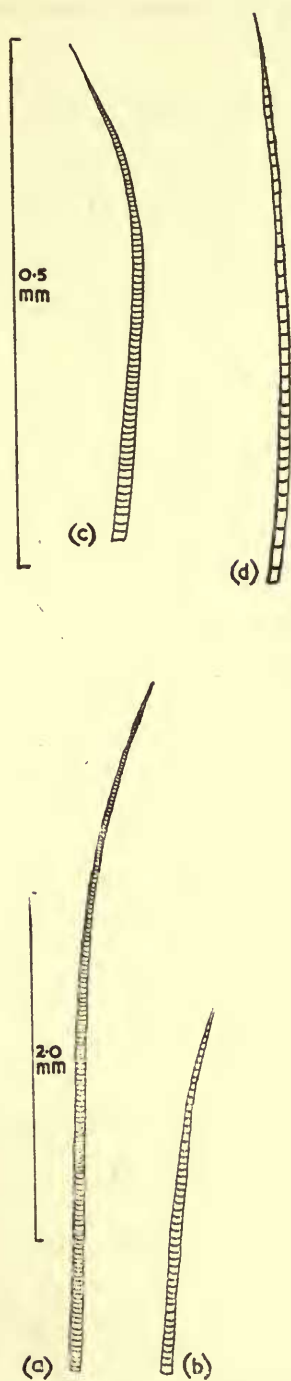


FIG. 28. *Stylariodes scutigeroides*. Chaetae ; (a) and (b) of the cephalic cage ; (c) neuropodial ; (d) notopodial.

DISTRIBUTION. The species was collected from Liberia, the Gold Coast, Accra, French Congo, Cabinda and Angola.

Family OPHELIIDAE

Body short, convex dorsally, with or without a gutter ventrally. Prostomium without appendages, frequently with cephalic eyes. Sometimes with lateral eye spots. Biramous parapodia with simple chaetae. Pygidium with papillae or sometimes prolonged into an anal tube.

KEY TO GENERA

1. With lateral branchiae *Armandia*.
2. Without lateral branchiae *Polyophthalmus*.

Genus *ARMANDIA* Filippi, 1861

Body not divided into distinct regions; a deep median and two lateral ventral grooves. Branchiae from the 2nd chaetiger to the end of the body. Pygidium with anal funnel fringed with papillae and a median cirrus. Lateral eye-spots.

Armandia intermedia Fauvel, 1902

Armandia intermedia Fauvel, 1902, pp. 86-89, figs. 29, 30, from Senegal.

Armandia intermedia, Augener, 1918, pp. 424-425, from Senegal and Angola.

Armandia intermedia, Day, 1949, p. 449, from St. Helena.

LOCALITY. Off Accra, Stn. 69 (1), 12 mm. long.

There are 29 chaetigers, the 1st abranchiate, the next 25 branchiate (though some of the posterior branchiae have fallen off, the point of attachment to the superior edge of the parapodia can be seen), and the last three abranchiate. Thirteen pairs of lateral eye-spots are situated on the 7th to the 19th chaetigers. There are three cephalic, subcutaneous, eye-spots disposed in a triangle. The anal funnel is fringed with numerous papillae, but many have fallen off and the exact number cannot be estimated.

DISTRIBUTION. This species is only known through the above records.

Genus *POLYOPHTHALMUS* Quatrefages, 1850

Similar to *Armandia* but with no branchiae.

Polyophthalmus pictus (Dujardin) 1839

Polyophthalmus pictus, Fauvel, 1927a, pp. 137-138, fig. 48, l-o.

LOCALITIES. (1) Tenpobo shore, 6.ii.50 (2), 6-8 mm. long; (2), Lighthouse Reef, Axim, 8.i.51 (1), 9 mm. long.

There are 28 chaetigers with about 11 pairs of eye spots on the 6th to 16th segments, but these are very difficult to see and may vary considerably in position.

DISTRIBUTION. English Channel, Atlantic, Mediterranean, and the Red Sea ; Pacific and Indian Oceans.

Family MALDANIDAE

Body of few segments some of which are exceptionally long. Prostomium without appendages, often with a rimmed cephalic plate and a median keel, on each side of which is a nuchal groove. Buccal segment achaetous. Parapodia biramous, notopodial chaetae capillaries, neuropodial chaetae uncinata ; no parapodial cirri. Anal segment with funnel and cirri or a flat plate. Inhabitants of cylindrical tubes which may be thin and covered with sand or thick and coated with mud.

Genus *MALDANE* Grube, 1860

Cephalic keel arched, rim divided into three by two lateral notches. Anus dorsal with a slanting anal plate. Ante-anal segments achaetous. Neuropodial chaetae missing from the first segment. Notopodial chaetae of three kinds. Tube coated with mud.

Maldane sarsi Malmgren, 1865

Maldane sarsi, Fauvel, 1927a, pp. 197-199, fig. 69.

LOCALITY. Off Accra, Buchanan Survey, in 36.5 metres off Castle (1), complete, about 62 mm. long.

Prostomium with the cephalic keel strongly arched and the rim smooth, but notched on each side.

The nuchal grooves are short, curved and deep. There are 19 chaetigers and two achaetous ante-anal segments. Notopodial chaetae are of three types : (a) long capillaries, barbed along their entire length ; (b) limbate capillaries, slightly barbed at their tips ; (c) very short geniculate capillaries with a limb on their convex borders.

Uncini with one very large tooth surmounted by 5-6 rows of smaller teeth ; beneath the large tooth there is a cluster of fine hairs.

DISTRIBUTION. Cosmopolitan.

Family OWENIIDAE

Cylindrical body of few segments having the prostomium fused with the buccal segment and being either devoid of appendages or terminating in a membranous lobe. Notopodial chaetae simple capillaries ; neuropodial chaetae uncinata, very small, with a bent hooked tip. Tube coated with sand and shell fragments.

Genus *OWENIA* Delle Chiaje, 1841

Prostomium terminating in a membranous branchial lobe. Buccal segment achaetous ; the first three chaetigers without uncini. Notopodial chaetae slender, slightly spinous. Pygidium bilobed.

Owenia fusiformis Delle Chiaje, 1841

Owenia fusiformis, Fauvel, 1927a, pp. 203-204, fig. 71, a-f.

Owenia fusiformis, Augener, 1918, pp. 492-493.

LOCALITIES. Off Accra : (a) Stn. 5 (25) ; Stn. 11 (4) ; Stn. 32 (numerous) ; Stn. 53 (24) ; Stn. 54 (numerous) ; Stn. 55 (50 +) ; Stn. 61 (7) ; Stn. 65 (numerous) ; Stn. 66 (numerous) ; Stn. 67 (36) ; Stn. 121 (2) ; Buchanan Survey, 3.6 to 11.0 metres (9) ; (b) Dredge haul off Chorkor, 1.xi.50 (20).

The animals vary in length between 40-60 mm., the tubes, many of which are empty, particularly from Stns. 55, 65 and 66, measure up to 88 mm. The thorax consists of the achaetous buccal segment and the first three chaetigers which have only notopodial capillaries ; there is no neuropodial component in this region. The remaining segments, which are all biramous, make up the abdomen, and are long in the anterior region, but posteriorly become progressively smaller. The tubes consist of agglutinated small shells and sand, the former orientated at right angles to the long axis, and are grey in colour.

DISTRIBUTION. Cosmopolitan.

Family SABELLARIIDAE

Body divided into four regions, (a) an anterior region with opercular disc and stalk, (b) a thorax of two anterior and three or four parathoracic segments, (c) an abdomen with uncinigerous dorsal rami and ventral rami with capillaries, (d) a caudal region, unsegmented, achaetous and apodous. The prostomium is hidden between the two large opercular stalks which carry paleae in concentric rows. Two palps. Simple branchiae are carried on the thorax and abdomen. Tubes are laid down and normally form sandy reefs of varying extent ; occasionally species may be solitary.

Genus *SABELLARIA* Lamarck, 1818

The operculum is short, with numerous filiform tentacles on the ventral side and provided with three visible rows of paleae. (The middle and inner rows probably represent a single row.) Thorax with two anterior segments, having only capillary chaetae, and three parathoracic segments with flattened paleae dorsally and similar, smaller chaetae, ventrally.

KEY TO SPECIES

1. Animal small, less than 10 mm. in length when sexually mature ; tubes made up of small particles of sand *S. eupomatoides*.
 Animals large, more than 15 mm. in length when sexually mature ; tubes made up of large and coarse sand grains 2.
2. Central tooth of outer paleae bluntly spatulate, entire or bifid *S. spinulosa* var. *intoshii*.
 Central tooth of outer paleae with a barbed point *S. spinulosa* var. *alcockii*.

Sabellaria eupomatoides Augener, 1918

Sabellaria eupomatoides Augener, 1918, pp. 503-504, pl. 7, figs. 187-190, text-fig. 83, from Angola.

LOCALITIES. Numerous masses of the tubes of this species were collected from Winneba shore, Apam shore and Christiansborg shore at various times in 1949; specimens normally measure between 5-8 mm. in length.

This species is characterized by its small size (a mature female from Winneba, collected 22.xi.49, measured 7 mm. long) and the form of the opercular paleae (Text-fig. 29). In some specimens several paleae of the median row project above

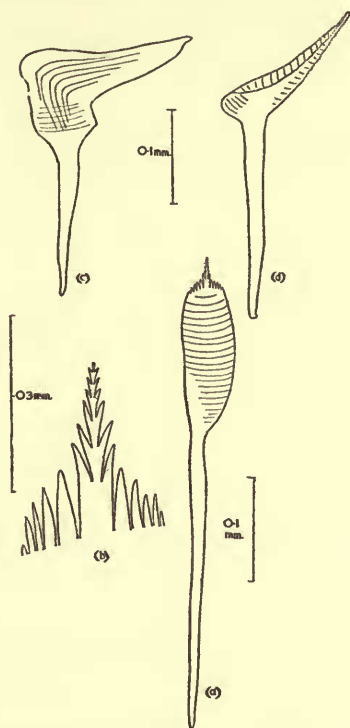


FIG. 29. *Sabellaria eupomatoides*. Opercular paleae: (a) from the external row; (b) enlarged terminal piece of (a), (c) from the outer row and (d) from the median row. (Specimen from Winneba.)

the level of the others. There are nine pairs of simple gills from the 2nd thoracic segment backwards.

S. eupomatoides was described by Augener in 1918 from specimens collected without their tubes, and has not been recorded since then except as above.

Sabellaria spinulosa Leuckart, 1849

Acicular chaetae are present on the dorsal face of the operculum, immediately posterior to the terminal crown of paleae. There is an inter-peduncular cirrus. Paleae in the external row have a barbed median tooth.

Sabellaria spinulosa var *intoshii* Fauvel, 1914

Sabellaria spinulosa var. *intoshii* Fauvel, 1927a, pp. 208-211, fig. 73p.

LOCALITIES. (1) Tenpobo shore, about 20 specimens and tubes were collected in January and February, 1949, several were complete and measured up to 36 mm. long without the tail. (2) Apam (1), incomplete, 20 mm. long, and numerous tubes. (3) Dixcove shore (1), incomplete, 30 mm. long, with tube. (4) Axim Lighthouse Reef, 14.iv.49 (4), up to 38 mm. long, with tubes.

This variety differs from the stem species in having the median tooth of paleae of the outer row with a spatulate tip. Occasionally this tip may be bifid.

DISTRIBUTION. English Channel and the Atlantic ocean (Gulf of Guinea).

Sabellaria spinulosa var *alcocki* Gravier, 1906

Sabellaria spinulosa var *alcocki*, Fauvel, 1927a, pp. 208-211, fig. 73, k-m.

LOCALITY: Axim, Hospital Reef, 7.i.51 (1), 18 mm. long, with tube.

Some of the paleae in the median row are always erect in this variety, otherwise it is similar to the stem species.

DISTRIBUTION. English Channel, North Sea, Atlantic Ocean, Indian Ocean and the Red Sea.

Family STERNASPIDAE

The form adopted in the family is aberrant. The body is swollen at both ends; the prostomium small and devoid of appendages; the first three segments have chaetae, the middle ones are achaetous, and posteriorly there is a ventral shield from the borders of which chaetae radiate. Branchiae are posterior to the shield.

Genus *STERNASPIS* Otto, 1820

Branchiae filiform, set in two bundles.

Sternaspis scutata (Ranzani) var. *africana* Augener, 1918

Sternaspis fossor Stimpson var. *africana* Augener, 1918, pp. 608-613, text-fig. 109.

Sternaspis scutata var. *africana*, Monro, 1930, pp. 179-180.

LOCALITIES. Off Accra: Stn. 27 (42); Stn. 28 (2); Stn. 33 (6); Stn. 47 (2); Stn. 59 (1); Stn. 61 (8); Stn. 68 (14); Stn. 69 (19); Stn. 71 (3); Stn. 130 (1); Buchanan Survey, 3.6 to 11.0 metres (4).

The specimens vary between 5 and 15 mm. in length, but these measurements must be treated with caution, for in many cases the anterior chaetigers have contracted into the succeeding segments.

As Augener (1918) and Monro (1930) pointed out, the variety is distinguished from the stem species by the greater number of chaetae (about 20 as opposed to 10-12) which occur on the anterior segments. The chaetae are also more slender in

the variety. These small differences seem to divide clearly the West African forms from the European and Antarctic examples, though further examination may indicate that the difference is merely ecological. Thus *S. scutata* has been reported from 68–1080 metres (Monro, 1930), from about 300 metres (Chamberlin, 1919), and *S. fossor* from 68–130 metres, (Fauvel, 1936) and from 120–130 metres, (Takahasi, 1938), whereas *S. scutata* var. *africana* has not been reported beyond a depth of 67 metres. Unfortunately many scattered records of the parent species do not give depth details or particulars of the morphological differences noted above, so that an accurate consideration of this issue is not possible. However, further collecting, at depth, off the Gold Coast may clarify the matter, and if it is confirmed that the morphological differences are non-genetic, but induced by the ecological conditions, the taxonomic treatment must be modified. If they prove to be genetic and associated with geography *africana* must rank as a subspecies.

DISTRIBUTION. *S. scutata* var. *africana* is only known from off the W. African coast, from Senegal south to Angola.

Family AMPHARETIDAE

Body divided into two regions, (a) thorax with notopodial capillaries and neuropodial uncini, (b) abdomen with neuropodial uncini only. Tentacles retractile into the mouth. There are three or four pairs of branchiae on anterior segments and they may be subulate, pectinate or bi-pectinate. With or without groups of paleae.

KEY TO GENERA

1. With paleae and without dorsal hooks behind the branchiae 2.
Without paleae and with dorsal hooks behind the branchiae *Isolda*.
2. With one of the four pairs of branchiae pectinate ; 17 thoracic chaetigers *Phyllamphicteis*.
With one of the four pairs of branchiae bi-pectinate ; 16 thoracic chaetigers *Pterolysippe*.

Genus *PHYLLAMPHICTEIS* Augener, 1918

With two fan-like groups of paleae ; thorax of 17 chaetigers with uncini appearing at the 4th. Abdomen of 15 chaetigers. Four pairs of branchiae, three subulate, one pectinate.

Phyllamphicteis collaribranchis Augener, 1918

Phyllamphicteis collaribranchis Augener, 1918, pp. 509–512, pl. 7, figs. 239–241, text-fig. 85, from Wappu on the Ivory Coast.

LOCALITIES. Off Accra : Stn. 28 (1) ; Stn. 33 (1) ; Stn. 69 (1) ; Stn. 70 (1) ; Stn. 97 (4) ; Stn. 111 (1) ; several of these specimens are complete measuring up to 20 mm. long.

There are 8–10 paleae in each fan. Thoracic uncini have five teeth ; notopodial capillaries are slightly limbate. Both parapodial rami have small cirri on thorax and abdomen. The tubes are of fine dark grey mud with a few adhering shell particles.

Four specimens collected in the Buchanan Survey, in 3.6 to 11.0 metres off Accra

and measuring between 20 and 30 mm. long, differ from the above in having two pairs of pectinate branchiae instead of one, though similar in other respects. It may be that they represent a different species, but it is possible that there is a considerable range of variation in this character within the species. Additional material and observations are needed to settle this point.

DISTRIBUTION. Only known from the above records.

Genus *PTEROLYSIPPE* Augener, 1918

With two groups of paleae, each like a fan. Thorax of 16 chaetigers with uncini appearing at the 4th. Four pairs of branchiae, 3 subulate and the other bi-pectinate.

Pterolysippe bipennata Augener, 1918

Pterolysippe bipennata Augener, 1918, pp. 512-514, plate 6, figs. 173 & 174, text fig. 86, from Whydah, Dahomey.

LOCALITIES. Off Accra: Stn. 59 (1), with tubes; Stn. 133 (1); Buchanan Survey, in 3.6 to 11.0 metres (4), and in 41.86 metres off the Lagoon (1); several of these specimens are complete and measure up to 18 mm. long.

The prominent bi-pectinate gill is coloured with numerous small purple marks. There are 15 abdominal segments. Thoracic uncini have 5-6 teeth, notopodial chaetae are limbate. Branchiae become easily detached in this species and it is rare to find a specimen with the complete set. No cirri are visible on the parapodia. Tubes are thick, of fine grey-black mud.

DISTRIBUTION. Only known through the above records.

Genus *ISOLDA* Muller, 1858

Without paleae. Number of thoracic and abdominal segments variable. Four pairs of branchiae, two subulate, and two feather-like. Two dorsal anterior hooks, immediately behind the branchiae.

Isolda whydahensis Augener, 1918.

Isolda whydahensis Augener, 1918, pp. 514-518, pl. 7, fig. 216, text-fig. 87.

LOCALITY. Off Accra, Buchanan Survey, in 5.5 metres off the breakwater (1), incomplete, length 15 mm.

There are 16 thoracic chaetigers the first three of which are very difficult to see. They lie on the prostomial collar and in the specimen examined the chaetae had been broken off. Neuropodial uncini appear at the 5th chaetiger, are short and have five teeth. Thoracic capillaries are limbate. The transverse membrane which, with the prostomial collar, encloses the branchiae and dorsal hooks, is smooth. Both of the inner pairs of branchiae are feather-like, the outer pairs are subulate.

DISTRIBUTION. *I. whydahensis* is known also from Whydah, Dahomey, the French Congo and Angola.

Family TEREBELLIDAE

Body with thorax having notopodial capillary chaetae on all chaetigers and neuropodial uncini on some, and abdomen with neuropodial uncini only. Prostomium with non-retractile tentacles. Branchiae, when present, normally on the anterior segments. In the thorax there are ventral glandular scutes. The tubes are coated with sand.

KEY TO GENERA

1. Without branchiae	<i>Amatea</i> .
With branchiae	2.
2. With a single quadripartite pectinate gill	<i>Terebellides</i> .
With more than one gill	3.
3. Thorax with more than 17 chaetigers	<i>Streblosoma</i> .
Thorax with 17 chaetigers or less	4.
4. Uncini pectinate	<i>Loimia</i> .
Uncini avicular	<i>Pista</i> .

Genus *PISTA* Malmgren 1865

Thorax with 15–17 chaetigers; eye-spots may be present. One, two or three pairs of branchiae. Notopodial chaetae smooth; neuropodial uncini appear in the thorax on the 2nd chaetiger.

Pista grubei Augener, 1918

Pista grubei, Augener 1918, pp. 542–5, pl. 7, fig. 252–3, text-fig. 92.

LOCALITIES. Off Accra: Stn. 28 (1); Stn. 61 (1); Stn. 69 (1); Stn. 131 (1).

None of the specimens is complete, they vary between 25 and 47 mm. in length.

There are 17 thoracic chaetigers, of which the first has only simple notopodial chaetae. In the next six segments there are also neuropodial groups of uncini in single rows, all the hooks lying in the same direction. The remaining 10 thoracic chaetigers, however, have the uncini lying alternately head to tail in a single row. The uncini are avicular in shape and all have a projecting basal process.

The gills are in two pairs, consisting of a long basal trunk supporting a mass of whorled branching filaments. They are dorsal, anterior to the first chaetiger.

DISTRIBUTION. Known also from Senegal, Ivory Coast, and French Congo.

Genus *TEREBELLIDES* Sars, 1835

With a single gill divided into four pectinate arms. Notopodial chaetae long, tapering and winged. Uncini of two types, the thoracic elongated, acicular, the abdominal pectinate.

Terebellides stroemi Sars, 1835

Terebellides stroemi, Fauvel, 1927a, pp. 291–2, fig. 100, i–g.

Terebellides stroemi, Fauvel, 1932, pp. 234–5.

LOCALITIES. Off Accra: Stn. 28 (4); Stn. 33 (2); Stn. 59 (4); Stn. 73 (2); Stn. 133 (2). Most of these specimens are complete, measuring between 10 and 30 mm. long. Buchanan Survey, 36.5 m. off Castle (1), 35 mm. in length.

Body rarely with more than 60 segments, the first 18 being thoracic, with the gill as above. Segments 3 to 6 have their anterior border free. Notopodial chaetae are simple and begin on segment 3; neuropodial uncini appear at the 6th chaetiger and are long, geniculate, acidular hooks; the remaining thoracic segments also have long uncini, but these end in blunt tips surmounted by small denticles. The abdominal uncini are avicular with a short base and transverse rows of teeth above the main fang.

DISTRIBUTION. Mediterranean Sea, Atlantic Ocean, Indian and Pacific Oceans.

Genus *STREBLOSOMA* Sars, 1872

Body with a large number of segments; often with eyes; with two or three pairs of branchiae (sometimes five?) on the 1st, 2nd, or 3rd chaetigers. Notopodial capillary bristles appear on the 2nd segment (1st branchiate). Neuropodial uncini appear on the 5th segment (4th chaetiger).

Streblosoma persica (Fauvel), 1908

Grymaea persica, Fauvel, 1911, pp. 419-421, pl. 20, figs. 35-43.

Pseudothelepous nyanganus, Augener, 1918, pp. 552-555, pl. 7, figs. 257, 258, text-fig. 96.

Streblosoma persica, Fauvel, 1950, p. 384.

LOCALITIES. (1) Tenpobo shore, about 100 specimens collected in January, 1949, and February, 1951, measuring between 20-50 mm. in length. (2) Apam shore, 16.ii.49 (12). (3) Dixcove shore, 7.ii.51 (12). (4) Axim, 13/14.iv.49 (2).

The species is characterized by (a) a semi-circle of eye-spots on the dorsal surface of the tentacular disc and (b) the shape of the uncini, which have a large basal tooth, paired smaller median teeth and above these a single smaller tooth with several tiny ones on either side of it.

Notopodial chaetae occur on almost all segments. There are three pairs of branchiae, formed of numerous filaments, one pair on each side of the first three chaetigers. The first pair are based on transverse pads which form semi-circles around the anterior aspects of the notopodia of the first chaetiger. The remaining two are based on pads situated wholly on the dorsal side of the notopodia.

DISTRIBUTION. The species has been recorded from the Persian Gulf, the Gulf of Manaar, the Island of St. Thomas in the Gulf of Guinea, Angola and Senegal.

Genus *LOIMIA* Malmgren, 1865

Body with 17 chaetigers and three pairs of aborescent gills. Anterior segments have lateral lobes. Notopodial chaetae winged. Uncini pectinate, opposed back-to-back in double rows from the 7th to the 17th thoracic chaetiger.

Loimia medusa (Savigny), 1822

Loimia medusa Augener, 1918, pp. 539-541, text-fig. 91.

Lanice fauvelii Day, 1934, pp. 71-73, fig. 14, a-d.

LOCALITY. Off Accra, Buchanan Survey, in 36.5 metres off the Castle (1), an incomplete specimen of 34 chaetigers measuring 28 mm. in length.

The three pairs of gills, of which the first is very much the largest, all lie anterior to the first chaetiger. The uncini have 6 teeth in both thorax and abdomen.

DISTRIBUTION. The species has been recorded from the English Channel, the Atlantic, Indian and Pacific Oceans, the Red Sea and the Persian Gulf.

Genus *AMAEA* Malmgren, 1865

Prostomium large, with many tentacles. Branchiae and eye-spots absent. Thorax of few segments, with notopodial chaetae. Abdomen consisting of an anterior achaetous portion and a posterior region with slender uncini.

Amaea accraënsis Augener, 1918

Amaea accraënsis Augener, 1918, pp. 561-562, pl. 7, fig. 246, text-fig. 98, from Accra.

This species has not been found in the present survey. The thorax has 11 chaetigers on the left hand side and 13 on the right. Notopodial chaetae are barbed capillaries. The achaetous abdominal region is about two-thirds as long as the thorax. There are 26-27 chaetigers posteriorly on the abdomen, bearing hooks with slightly bent tips. Augener's specimen measured 18 mm.

DISTRIBUTION. This species is only known from the type specimen.

Family SABELLIDAE

Body divided into two regions: (a) thorax, with few segments, having notopodial capillaries and neuropodial uncini, and (b) abdomen, normally with numerous segments having notopodial uncini and neuropodial capillaries. Ventral glandular shields divided by a longitudinal groove. First chaetiger with an entire, or notched collar. Branchiae encircling the mouth. Tubes of mucous, or membranaceous or horny, material.

KEY TO GENERA

- | | |
|---|--------------------|
| 1. Thoracic neuropodia with a single row of avicular uncini, pickaxe-shaped chaetae absent | 2. |
| Thoracic neuropodia with a row of avicular hooks and a row of pickaxe-shaped chaetae (fig. 30, a) | <i>Potamilla</i> . |
| 2. Branchiae without dorsal stylodes | <i>Laonome</i> . |
| Branchiae with dorsal stylodes | <i>Dasychone</i> . |

Genus *LAONOME* Malmgren, 1865

Two symmetrical, semi-circular, branchial lobes not in the form of a spiral. Branchial filaments without stylodes. No pickaxe-shaped chaetae.

Laonome puncturata (Augener), 1918

Demonax puncturatus Augener, 1918, pp. 576-580, pl. 6, fig. 170, 171, text-fig. 102.

Euratella puncturata Monro, 1930, p. 203.

LOCALITIES. (1) Accra: considerable quantities of tubes were collected from Christiansborg shore on 15.i.49, 14.ii.49, and 17.iii.49. (2) Apam, 16.ii.49,

numerous specimens and tubes. (3) Axim shore, 13/14.iv.49, numerous specimens but no tubes.

The prominent prostomial collar opens dorsally and forms two triangular lappets ventrally. There are between 10 and 12 branchial filaments which, in most specimens, bear at least one distinct pigment band. Pigment spots are also present on the collar and between the rami of thoracic and abdominal feet. No clear division is discernible between pigmented and non-pigmented forms since specimens from all localities show the above pattern, but one separate and large collection from Christiansborg shore (15.i.49) is completely without colour. The outside edge of the filaments is thickened in places suggesting rudimentary stylodes, but they are much less well developed than in the genus *Dasychone*. The branchial membrane reaches along one-sixth of the length of the branchial filaments; the two palps are foliaceous and a little longer than the membrane.

There are 4-5 thoracic chaetigers and about 100 abdominal segments. Neuropodial uncini appear at the 2nd foot. Thoracic capillaries are of two kinds, short with a prominent limbate termination (not spatulate) and long with a slightly limbate end; thoracic uncini are short, avicular. Abdominal capillaries and uncini are identical with thoracic bristles.

Augener (1918) placed this species in the genus *Demonax* Kinberg, which, however, has pickaxe-shaped chaetae in the thoracic neuropodia; Monro, (1930) placed it in the genus *Euratella* Chamberlin, which has no collar and only one type of thoracic capillary. It is here considered that the species is referable to *Laonome*.

Genus *DASYCHONE* Sars, G.O., 1861

Both branchial lobes equal, not in the form of a spiral. Stylodes on the branchial filaments. Prominent collar. Pickaxe-shaped chaetae absent.

Dasychone lucullana (Delle Chiaje), 1828

Dasychone lucullana, Fauvel, 1927a, pp. 320-321, fig. 110, m-s.

LOCALITIES. Off Accra: Stn. 35 (1), 8 mm. long; Stn. 73 (1), 15 mm. long; Stn. 131 (1), 16 mm. long, all specimens complete.

The two branchial lobes are each made up of 13-14 filaments which carry slender, colourless stylodes dorsally. Along the filaments there are numerous violet pigment spots, which, when the branchiae are closed, give the effect of successive girdles of colour along the lobes. A small branchial membrane unites the bases of the gills; there are two prominent canaliculate palps.

The body, other than the branchiate portion, is uniformly brown, with a small violet pigment spot between the parapodial rami. There are 8 thoracic and between 30 and 40 abdominal segments. Thoracic uncini which appear at the 2nd chaetiger, are avicular with slight extension at the base; thoracic capillaries are limbate, short and long. Chaetae in the abdominal region are similar to thoracic types except that long capillaries, only slightly limbate, appear in far posterior segments.

DISTRIBUTION. Mediterranean and Adriatic Seas and from Senegal.

Genus *POTAMILLA* Malmgren, 1865

Branchial lobes symmetrical, not in a spiral, without stylodes. With a prominent, lobed collar. Thoracic notopodial capillaries limbate and spatulate, neuropodial chaetae avicular uncini and pickaxe-shaped. Abdominal notopodial uncini avicular and neuropodial capillaries limbate.

Potamilla casamancensis Fauvel, 1902

Potamilla casamancensis Fauvel, 1902, pp. 101-105, fig. 46-55, from the estuary of the River Casamance, Senegal.

LOCALITIES. Off Accra : Stn. 12 (1), complete, 16 mm. long ; Buchanan Survey in 11 metres off Lighthouse (2), complete, 14 and 24 mm. long ; Buchanan Survey in 5.5 metres off the Lagoon (1), incomplete, 8 mm. long.

There is an indentation in the collar dorsally, forming a deep groove which continues down the dorsal surface of the thorax ; ventrally there is only a very slight break in the anterior border of the collar.

Ten to sixteen filaments make up each branchial lobe ; the filaments are without eye-spots. There are 5-7 thoracic chaetigers ; uncini and pickaxe-shaped chaetae appear at the second. The limbate capillaries on the first segment are in a longitudinal row, thereafter they are lateral. Spatulate capillaries appear at the second chaetiger and are normally few in number. Limbate capillaries are present in all segments, both thoracic and abdominal ; spatulate chaetae have not been seen in the abdomen. Uncini in the thorax are avicular with long shafts ; in the abdomen they are short.

DISTRIBUTION. *P. casamancensis* is only known through the above records.

Family SERPULIDAE

Body divided into two regions ; (a) thorax, with few segments, having notopodial capillaries and neuropodial uncini, and (b) abdomen, with numerous segments, having notopodial uncini and neuropodial capillaries. First segment with a collar. With a thoracic membrane. Branchiae form a funnel around the mouth. Usually with an operculum. Tube calcareous.

KEY TO GENERA

- | | |
|--|-----------------------|
| 1. Body symmetrical | 2. |
| Body asymmetrical. Tube spirally coiled | <i>Spirorbis</i> . |
| 2. Without an operculum | <i>Salmacina</i> . |
| With an operculum | 3. |
| 3. Chaetae of the first chaetiger bayonet-shaped with two basal stumps | 4. |
| Chaetae of the first chaetiger without basal stumps | 5. |
| 4. Operculum simple, funnel-shaped | <i>Serpula</i> . |
| Operculum compound, with a central crown of spikes | <i>Hydroides</i> . |
| 5. Operculum globular, transparent | <i>Apomatus</i> . |
| Operculum horny, with a cylindrical or conical cap | <i>Vermiliopsis</i> . |

Genus *SALMACINA* Claparède, 1868

Without an operculum and with few branchiae which are frequently bent distally. Uncini pectinate with a large inferior tooth.

Salmacina incrustans Claparède, 1868

Salmacina incrustans, Fauvel, 1927a, pp. 378-380, fig. 129, 1.

LOCALITIES. Numerous specimens were collected from: (1) Tenpobo shore, on rocks, 4.ii.50; (2) Winneba rock face, sheltered side, 22.xi.49, forming compact masses about the Polyzoan, *Waterispora cucullata*; (3) Apam shore, 16.ii.49; (4) Axim hospital reef, 13.iv.49, L.W.M., some specimens were present on a tube of *Sabellaria spinulosa* var. *alcocki*.

The majority of these specimens measure between 2 and 3 mm. Tubes are white, cylindrical in shape, and very fragile.

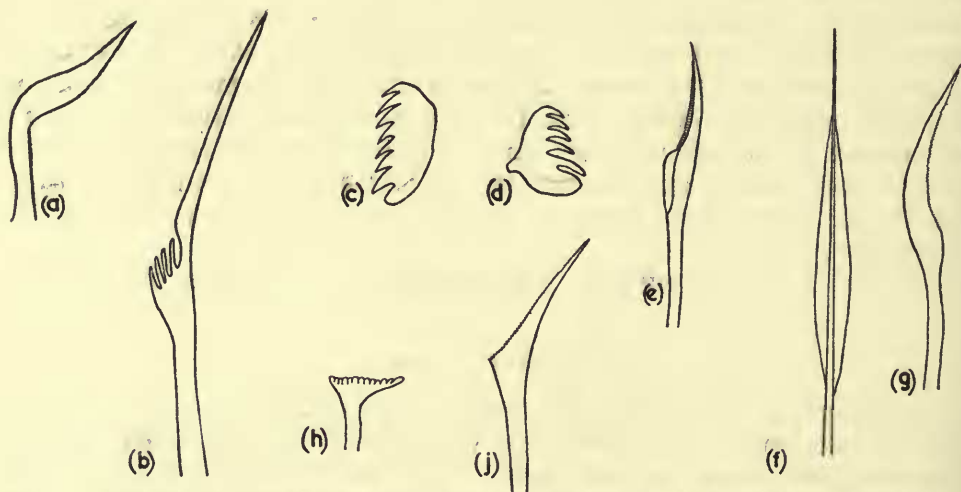


FIG. 30. Chaetae of (a) *Potamilla casamancensis*, pickaxe-shaped bristle from a thoracic neuropodium, $\times 350$ (stn. 49); (b) *Salmacina incrustans*, a notopodial chaeta from the first thoracic segment $\times 200$, (Winneba); (c) and (d) *Hydroides arnoldi*, thoracic and abdominal uncini respectively, $\times 400$ (e), (f) and (g) *Apomatus similis*: (e) *Apomatus*-type chaeta from a posterior thoracic segment, $\times 100$, (f) limbate chaeta from a thoracic segment, (g) scythe-like chaeta from a median abdominal segment $\times 150$; (h) *Serpula vermicularis*, trumpet-shaped abdominal chaeta, $\times 200$ (Stn. 115); (j) *Vermiliopsis multicristata*, geniculate abdominal chaeta, $\times 200$.

There are four pairs of gill filaments and seven thoracic chaetigers. A notopodial chaeta from the first of these is shown in Text-fig. 30, b. This form is characteristic for the species.

DISTRIBUTION. Mediterranean Sea and Atlantic Ocean.

Genus *HYDROIDES* Gunnerus, 1768

Chaetae of the first chaetiger bayonet-shaped, with two humps at the base of the blade. Thoracic chaetae limbate; abdominal chaetae trumpet shaped. Uncini in thorax and abdomen with coarse teeth. Operculum funnel-shaped, with radii ending bluntly or in fine points, and with a crown of horny spines rising from its centre.

Pixell (1913) suggested that *Hydroides* should include those species with opercular spines having lateral processes and that species devoid of these lateral processes should be included within the genus *Eupomatus*. This division is not adopted in this paper.

KEY TO SPECIES

- | | |
|--|-----------------------|
| 1. Opercular spines all alike | 2. |
| Opercular spines not all alike | <i>H. spinosus</i> . |
| 2. Opercular spines with lateral processes | <i>H. norvegica</i> . |
| Opercular spines without lateral processes | <i>H. arnoldi</i> . |

Hydroides norvegica Gunnerus, 1768

Hydroides norvegica, Fauvel, 1927a, pp. 356-7, fig. 122, i-o.

LOCALITY. Scraped off copper sheathing of boat and body, Gold Coast, (50).

The species is immediately recognizable by its opercular structures. The basal disc is soft and white, bearing marginally between 20 and 30 crenulations. Frequently the distal horny disc is missing but, when present, it carries 13 to 15 large spines with smaller lateral ones. A small vertical spine is situated in the centre of the opercular disc. The operculum itself is a modified branchial filament, the ventral-most of one side or the other; whichever it may be, and there is no constancy, the other is always broken off.

Chaetae of the first of the seven thoracic chaetigers have two humps below the terminal point and below the humps there are a few fine denticulations. Thoracic uncini have seven teeth and abdominal uncini five.

DISTRIBUTION. Cosmopolitan.

Hydroides spinosus (Pixell), 1913

Eupomatus spinosus Pixell, 1913, p. 78, pl. 8, fig. 5.

LOCALITIES. (1) Tenpobo, No. 1 Reef, 21.xi.49 (1), complete, 15 mm. long. (2) Off Accra: (a) Trawled 2 miles west of Densu River, 2.iii.49 (1), incomplete, 10 mm. long; (b) Stn 99 (3), one complete, 10 mm. long, on tubes of *Turritella annulata* Kiener; Stn. 127 (1), complete, 11 mm. long, on a tube of *T. annulata*.

These specimens differ only slightly from the original description (Pixell, 1913). Thus the basal disc has frequently more than 32 long, pointed teeth and the number of tall strong spines on the upper disc, is not constantly 11 but varies, some specimens having 8, 9 or 10. The shape of all the spines except one is identical, they each have a terminal hook pointing outwards, a near-terminal one pointing downwards

and inwards and an inner median near the base. The exceptional one is longer than the others, curves over them, and has only a basal hook.

DISTRIBUTION. *H. spinosus* has previously been recorded from the Suez Canal area and the Cape of Good Hope.

***Hydroides arnoldi* Augener, 1918**

Hydroides arnoldi Augener, 1918, pp. 595-598, text-fig. 107, pl. 6, figs. 151, 152, from Togo, Dahomey, and the Island of Annobon.

LOCALITY. Axim shore, 14.iv.49 (3), incomplete, 4-11 mm. long.

There are seven opercular spines which have an inner basal hook but are devoid of other processes. The largest, and possibly oldest, specimen has almost straight spines with blunt ends (Augener, 1918, pl. 6, fig. 152), but the smallest, and possibly youngest, has spines ending in a curved tip. It is suggested that normal wear on the operculum has produced these different shapes and the species may be expected to vary in this character even more than is noted here.

Thoracic and abdominal uncini are illustrated in Text-fig. 30, *c* and *d*.

DISTRIBUTION. *H. arnoldi* is only known from the above records.

Genus *APOMATUS* Philippi, 1844

With a globular transparent operculum. Branchial filaments with eye-spots and short connective membrane. No special notopodial chaetae on the first thoracic segment, which is without neuropodia, but with characteristic *Apomatus*-type bristles on the last segments (Text-fig. 30, *e*).

***Apomatus similis* Marion and Bobretzky, 1875**

Apomatus similis, Fauvel, 1927a, pp. 385-387, fig. 131 *k-p*.

LOCALITY Off Accra, Stn. 115 (10), with tubes, on the Polyzoan *Steganoporella buskii* Harmer. The specimens measure up to 6 mm. in length.

The branchial lobes are made up of 10 to 16 filaments each. The second dorsal filament carries a globular transparent operculum distally, but it is otherwise unmodified and combines a branchiate and operculate function. This represents a primitive stage in the modification of a branchial filament to an operculum. Complete modification is found in the majority of Serpulidae, but there is no trace of it in *Filograna* and *Protula*.

There are seven thoracic and well over 60 abdominal segments. The majority of thoracic chaetae are limbate (Text-fig. 30, *f*), but in the last 3-4 segments of the thorax characteristic *Apomatus*-type bristles appear (Text-fig. 30, *e*). Anterior abdominal segments are achaetous. Neuropodia in the middle of the abdomen have very small scythe-like chaetae (Text-fig. 30, *g*), but in four posterior segments long capillaries are present. Abdominal and thoracic uncini are alike, with numerous small teeth and a long basal one.

Tubes are white and semi-cylindrical, with slight lateral crenulations.

DISTRIBUTION. English Channel, Mediterranean Sea, Atlantic Ocean.

Genus *SERPULA* Linnaeus, 1758

Chaetae of the first thoracic segment bayonet-shaped, with two humps at the base of the blade. Operculum funnel-shaped with radii ending bluntly along the margin. Thoracic chaetae limbate, abdominal chaetae trumpet-shaped. Uncini with few, but stout teeth.

Serpula vermicularis Linnaeus, 1767

Serpula vermicularis, Fauvel 1927a, pp. 351-352, fig. 120, a-g.

LOCALITIES. (1) Tenpobo reef, 12.xi.49 (2), incomplete, 10 and 20 mm. in length, without tubes. (2) Off Accra, Stn. 115 (3), complete, up to 20 mm. in length.

These specimens appear to be smaller than is normal for the species (Fauvel, 1927a), but those from Stn. 115 were taken from tubes completely attached to the polyzoan, *Steganoporella buskii*, none of the tubes growing free, and they may be juveniles. The tubes are pink in colour, and triangular in shape with a prominent dorsal keel.

There are 16-20 branchial filaments in each lobe united by a short basal membrane. The first dorsal filament of one side is completely adapted as an operculum, with a funnel-shaped termination having a crenulated surface. The first dorsal filament on the opposite side to that bearing the operculum is partially modified; it is similar to the opercular filament, but is smaller and lacks the funnel-like termination.

There are seven thoracic chaetigers the first without neuropodia. Apart from the bayonet-shaped chaetae with two basal humps on the first thoracic segment, notopodial-chaetae are unmodified capillaries. Abdominal neuropodial chaetae are trumpet-shaped (Text-fig. 30, h).

DISTRIBUTION. Cosmopolitan.

Genus *VERMILIOPSIS* St. Joseph, 1906

Operculum a horny cylindrical or conical cap. No special chaetae on the first chaetiger, which is without neuropodia. *Apomatus*-type chaetae in posterior thoracic segments. Abdominal chaetae geniculate (Text-fig. 30, j).

KEY TO SPECIES

- | | | | | | | | | |
|-----------------------------------|---|---|---|---|---|---|---|--------------------------|
| 1. With seven thoracic chaetigers | . | . | . | . | . | . | . | <i>V. multicristata.</i> |
| 2. With nine thoracic chaetigers | . | . | . | . | . | . | . | <i>V. prampramiana.</i> |

Vermiliopsis multicristata (Philippi), 1844

Vermiliopsis multicristata, Fauvel, 1927a, pp. 365-366, fig. 125, k-s.

LOCALITY. Off Accra, Stn. 115 (6), some complete, up to 10 mm. long, taken from tubes attached to the polyzoan *Steganoporella buskii*.

This species is characterized by its tube bearing 5-6 longitudinal ridges. There are about 10 branchial filaments to each lobe. The operculum is horny and cylindrical

to conical in shape. In the thorax there are seven chaetigers and in the abdomen upwards of 50. The majority of thoracic chaetae are limbate, but in posterior segments a few *Apomatus*-type bristles appear. Abdominal chaetae are short and geniculate (Text-fig. 30, j) anteriorly, but posteriorly long capillaries appear.

DISTRIBUTION. Mediterranean Sea and Atlantic Ocean—Madeira and the Azores.

Vermiliopsis prampramiana Augener, 1918

Vermiliopsis prampramiana Augener, 1918, pp. 603–604, pl. 7, fig. 256, from Pram Pram.

This species is only known through this record, and is the only species of *Vermiliopsis* known with nine thoracic chaetigers. Augener's description is otherwise incomplete, and it is difficult to assess the species relationship with other members of the genus or family.

Genus *SPIRORBIS* Daudin, 1800

Body assymetrical, with less than five thoracic segments. Opercular peduncle without pinnules. Tubes spirally coiled, dextral or sinistral.

KEY TO SUB-GENERA

- | | |
|---|----------------------------|
| 1. Tube dextral | 2. |
| Tube sinistral | 3. |
| 2. With 4 thoracic segments | (<i>Paradexiospira</i>). |
| With 3 thoracic segments | (<i>Dexiospira</i>). |
| 3. With 4 thoracic segments | (<i>Paralaeospira</i>). |
| With 3 thoracic segments | 4. |
| 4. Chaetae of the first thoracic chaetiger limbate | (<i>Leodora</i>). |
| Chaetae of the first chaetiger with a crenulated wing | (<i>Laespira</i>). |

This genus was, surprisingly, absent from the collections, but it is almost certainly present in the Fauna, and, for this reason the above key has been included, (from Fauvel, 1927a, pp. 389–391). Augener (1918, pp. 607–608), reported *Spirorbis* sp. from the "Cape Coast Castle", probably Christiansborg Castle, but his description does not permit further identification. When, and if, species are collected further reference to Fauvel should be made.

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